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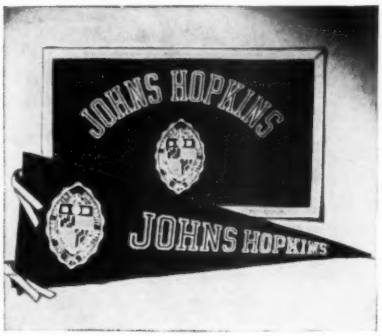

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The Johns Hopkins Magazine

VOLUME X DECEMBER, 1958 NUMBER 3

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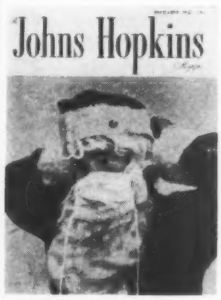

The Cover

Santa Claus, a gentleman who manages to get to all sorts of places at Christmastime, demonstrates his thoroughness of coverage on this month's cover. Here he is at the Johns Hopkins Hospital, making his Christmas-morning rounds. He is about to visit a child who is in protective isolation due to her susceptibility to infection, so he dons a mask like everybody else. Dr. Robert C. Neerhout, pediatrician, is Santa.

PHOTOGRAPH BY RICHARD THOMPSON

In This Issue

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Today they rise above a peaceful community of scholars. But it was not always thus. Town and gown were often bitter antagonists. Here is the story, in text and new photographs.

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The thought of spending Christmas in a hospital is not a happy one. But, as shut-in children discover every year, the reality is often more pleasant than one thinks it will be.

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EDITOR'S NOTES
AN INFORMAL REPORT

THE PHOTOGRAPHERS who provide the pictures for this magazine have received tribute from us more than once in this space. This month we honor a performance several cuts above the call of duty—no joke intended, although the last phrase, as you will learn in a moment, is a fairly apt one.

Among the less sought-after assignments to photographers (or to anybody else, for that matter) is one involving work on Christmas Day. Since nearly everything at the Johns Hopkins University shuts down on Christmas, we often turn, in search of a Christmas story, to the Johns Hopkins Hospital, which *never* shuts down. Two years ago it was Alan J. Bearden who got the Christmas-Day assignment: crawl out of bed before dawn and get to the Hospital in time to cover the early-morning Christmas caroling by Johns Hopkins nurses. Last year it was Robert M. Mottar, the results of whose work we have been saving for eleven months in order to present them to you on pages 16 through 19 of this issue.

Mottar not only carried out his assignment—to cover Christmas at the Hospital—but went one step further than requested. To get the feel of the story, he elected to become a Christmas patient himself. After dutifully making the pictures we had asked him to make, he made one more (*below*): a shot in the operating room as he himself underwent surgery (local anesthetic) on Christmas Day.

ROBERT M. MOTTAR

A cut or two above the call of duty.

Alan Bearden, meanwhile, is logging thousands of miles to gather pictures for a new series that begins in this issue: "Our Academic Heritage." He is visiting the leading universities of Great Britain and the continental countries in a Johns Hopkins Magazine project to show the family tree on which university education in this country has grown. The development of the university idea is a fascinating story—and it is our hope that we can transmit some of it to you.

*

The ink had hardly dried on the October issue of this magazine when readers began to respond to our proposal that they join us in collecting passing literary references to Johns Hopkins. The collection started when we discovered, amid the debris on our desk, a passage we had copied from a book we had read (a detective story, we thought):

". . . 'Beautiful, Miller, beautiful,' he murmured complacently. 'Not even in John [*sic*] Hopkins in the city of Baltimore . . . .' "

The number of readers with long, and evidently photographic, memories astounded us. The passage has been identified by persons from California to Nottingham, England. It comes, we now know, from Alistair MacLean's *Guns of Navarone*, a novel of sabotage and intrigue in World War II. Most of our correspondents said that they remember the passage because of that missing *s* on *Johns*.

*

The international spy novel appears to be a likely setting for Hopkins references. Here is another, from *Beard the Lion*, a new book by William Manchester. The locale, a Turkish bath aboard a transatlantic liner. The hero, Ben, has been locked in:

"At 300 degrees Ben was nauseated, too. His watch had stopped. He supposed it was about 11 o'clock; they could last another half hour at most. He closed

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his eyes and gave himself to wistful schoolboy visions of heroism. Mythical headlines swam across his giddy consciousness: SCIENTIST DEFIES ASSASSIN IN MIRACULOUS ESCAPE, NOTES SOUGHT BY HOPKINS ARCHIVES, SURVIVES CRITICAL TEMPERATURE."

*

From science fiction comes the following ("Private Eye," a story in *The Best Science Fiction Stories: 1950*):

"...an antique letter cutter, once used at Johns Hopkins for surgery. That was before the ultra-microtome, of course."

Writes the supplier of this item, a doctor in Florida: "The exact date in the future isn't evident in the story. I suppose a scalpel could be used as a letter-opener and, in this case, as a murder weapon. But what would an 'ultra-microtome' have to do with the work that a scalpel now does? Good science fiction (and there is plenty of it) doesn't usually make mistakes like this...."

*

We've had inquiries about the ground rules of the collection. Are television-drama references eligible? We hereby declare them to be, and present this summary, submitted by a reader who dashed for pencil and paper when he heard Johns Hopkins mentioned on the General Electric Theater:

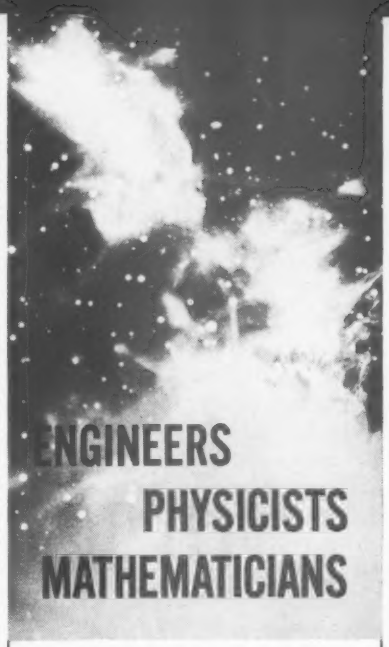
"Vincent Price is selling snake oil, see? Comes across this hillbilly family, see? Family near the end of its tether. Hope gone, health gone, faith gone. Price comes to rescue. Tells them he's a doctor. Studied in Vienna. Studied at Johns Hopkins. Wouldn't sell them snake oil, but *would* let them have his good-luck medal. Family faith restored by possession of medal. Then family loses medal. But keeps its faith."

*

A choice item is so long that we can't hope even to summarize it in the space that's left. And it's too good to compress. If you can't wait, get a copy of H. Allen Smith's *Compleat Practical Joker* and read the story about Jim Moran.

*

Merry Christmas!



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Our Academic Heritage

The Medieval University

BETTMANN ARCHIVE

Bloodshed, mayhem, and riots marked the growth of scholarship

THE UNIVERSITY was born in the twelfth century into an atmosphere that was intellectually exciting and historically unique. Almost at once it rose in power and prestige to dominate the thought, culture, theology, philosophy, and science of medieval Europe. While the Church and the empire jousted for authority, the university defied them both and inspired in civilized Europe a new respect for learning that approached deification. Instead of incurring their condemnation, the university paradoxically became the favorite stepchild of both the Church and the empire, and these all-embracing institutions rivaled each other as academic benefactors.

In Paris, learned doctors philosophized and argued, and the world listened attentively. A pope dared differ with them on a subtle point of theology and so aroused their ire that he hastened to apologize, excusing himself on the grounds that, after all, he had never got a doctorate in theology. The citizens of the town of Oxford rashly hanged certain mischievous scholars; an outraged university's retaliation reduced the town to a mere appendage, a chattel to Oxford University. At Bologna, mother of universities, esteemed professors determined the course of European law for centuries.

Such was the power of this unique institution. It had no precedent in the ancient world. Greece and Rome had pursued higher education, but there were no licensed masters, formal examinations, or degrees. Different from anything the world had ever seen, the university so captivated the imagination of mankind that its influence was to extend to all civilizations through all the years to come.

HOWEVER abrupt it may have seemed, the university's development was historically logical. When the grandeur of Greece and the glory of Rome were at their nadir, Europe was submerged into the Dark Ages. The powerful Roman Empire crumbled, and political divisions dissolved. In the absence of higher authority, any man with sufficient wealth or influence could declare himself prince and ruler. These self-styled monarchs built their fortresses on jutting cliffs, gathered armies about them, and carved out empires with their swords. Small but bloody wars raged throughout Europe, leaving no time for leisure or learning.

Some historians have questioned the belief that learning was preserved during this period by the monastery schools. Nathan Schachner, for example, in his book on the medieval universities, says the monastery school was for the clerical education of the monks, but was distinguished, with rare exceptions, by its slothfulness and ignorance. What learning existed was purely ecclesiastic, devoid of the arts or Latin classics, which were considered full of "insidious ideas."

The first glimmer of light in the Dark Ages came in

the ninth century with Charlemagne. Between wars he found time to develop a passion for learning which caused him to welcome into his court scholars from all lands. Thus was formed the palace school, which picked up the fragile thread of learning that had been all but lost in the Dark Ages.

Before the end of the ninth century, Charlemagne's influence disappeared. The young noblemen abandoned their pursuit of knowledge to defend themselves against the hordes of invading Magyars, Northmen, and Saracens. The next hundred years were an age of anarchy and bloodshed which obliterated the palace school and, with it, the slight gains in scholarship.

The eleventh century brought the great revival of learning which set the stage for the appearance of the university. Why this intellectual flowering occurred is difficult to explain. Credit it to the indestructible spirit of man. The revival of learning was undoubtedly aided by the cathedral schools of Rheims, Angers, Tours, Chartres, and Laon, which maintained some continuity of scholarship.

The new enthusiasm for scholarship came in a century when peace had settled on a war-torn Europe, when nations were taking shape and the first Crusade was underway, and when the feudal system, with the doubtful security it offered, had become established. This was the beginning of the Middle Ages—the time for the beginning of the university.

BETTMANN ARCHIVE

Reunion of the faculty at the University of Paris, from a miniature in the Bibliothèque Nationale. At top of opposite page: master and students at Salerno.

THE REVIVAL of learning which occurred in the eleventh century developed into an intellectual renaissance in the twelfth century. Although some historians attribute this to the Crusades, Schachner gives less credit to this source. Says he, "It was inevitable that the backwash into Europe should bring with it a rich silt of ideas from these superior civilizations [Byzantine and Saracen], fertilizing and quickening the West into a great blaze of learning and speculation." But Schachner goes on to point out that the people who participated in the Crusades were certainly not interested in scholarship. They were feudal lords and knights, "strong of body and weak of head." They were professional soldiers who were even less interested in learning than their masters were. And they were criminals, outlaws, "the scum of every city and village and countryside, eager for blood and loot and the proclaimed absolution of the Church for their murky pasts."

Two factors which contributed greatly to the rise of the university were the new stability which had occurred in Europe, and the discovery of logic. Both the empire and the Papacy had reached new heights of power and were stabilizing their rule. The economic system was becoming firm and profitable. The strongest of the self-acclaimed monarchs had overcome their less powerful opponents, thus ending much of the warfare that had kept Europe in turmoil. In general, the chaos of the Dark Ages was giving way to the more stable and orderly medieval culture.

THE RISE of universities and the revival of learning were substantially advanced by the discovery of logic. Great teachers like Abelard, Roscelin, and Anselm used this new and fascinating science and attracted droves of eager students. Such all-consuming passion for logic, evolved from the age of Aristotle and Plato, was introduced into the Middle Ages through the rediscovery of works of the Greek scholar, Porphyry. In his *Isagoge*, he wrote:

". . . Concerning genera and species, the question indeed whether they have a substantial existence, or whether they consist in bare intellectual concepts only, or whether if they have a substantial existence they are corporeal or incorporeal, and whether they are separable from the sensible properties of things (or particulars of sense), or are only in those properties and subsisting about them, I shall forbear to determine. For

Continued on page 30

The Great Gray Spires of Oxford

Photographed for The Johns Hopkins Magazine by Alan J. Bearden

By 1209, some three thousand English scholars, expelled from the University of Paris as a result of a quarrel between Henry II and Thomas à Becket, had gathered in the town of Oxford and made the local *studium* a university comparable to Paris and Bologna. The great gray spires which now rise above the water meadows where the Cherwell meets the Thames tell nothing of the turbulence of this medieval Oxford.

The famed "town and gown" riots, which eventually were to result in the town's becoming subservient to the university, began in 1209 with the hanging of certain scholars for allegedly killing a townswoman, and climaxed in 1355 with the notorious battle of St. Scholastica's Day. The greatest weapon of the university in these conflicts was the migration—students and masters vacated a city, taking with them the prestige and gold which the town coveted. After the hanging of 1209, masters and students migrated (most of them to Cambridge to found Oxford's great academic rival). They returned five years later with a papal charter unlike any ever before granted. The charter provided that for ten years the townspeople give up half their rents from student lodgings, and that they not raise their rents for another ten years. Fair food prices were set, and a fine of fifty-two shillings was levied on the town to be paid annually for poor scholars. (Though taken over by the Crown, it is still being paid.)

In subsequent conflicts, the town lost more and more of its rights. But most devastating of all such losses was the royal decree following the St. Scholastica's Day riot. Like many other riots, this one began in a tavern, where dissatisfied students poured "bad" wine over the innkeeper's head. In a few minutes, the bell of St. Martin's Church tolled the alarm, and the townspeople issued forth to revenge the innkeeper. Any students who happened to be in the streets were set upon and badly beaten. In response, the bell of St. Mary's tolled—the university's own alarm. The ensuing battle raged for three days. Neighboring towns aided Oxford citizens, and the mob invaded the university quarter where beleaguered students fought from doorways and windows. Houses, churches, and monasteries were pillaged or destroyed. When the bloodletting finally stopped, there was no trace of the University of Oxford.

The citizens who assumed they had ended the university were underestimating the vitality of the medieval university. The king heard the scholars' cries and issued a royal decree which forever gave the university full jurisdiction over the town in almost all matters.

Oxford emerged from its medieval infancy with a strength that would serve it well in the years ahead.

Part of the skyline of Christ Church College is silhouetted against the twilight sky. It was planned by Cardinal Wolsey.

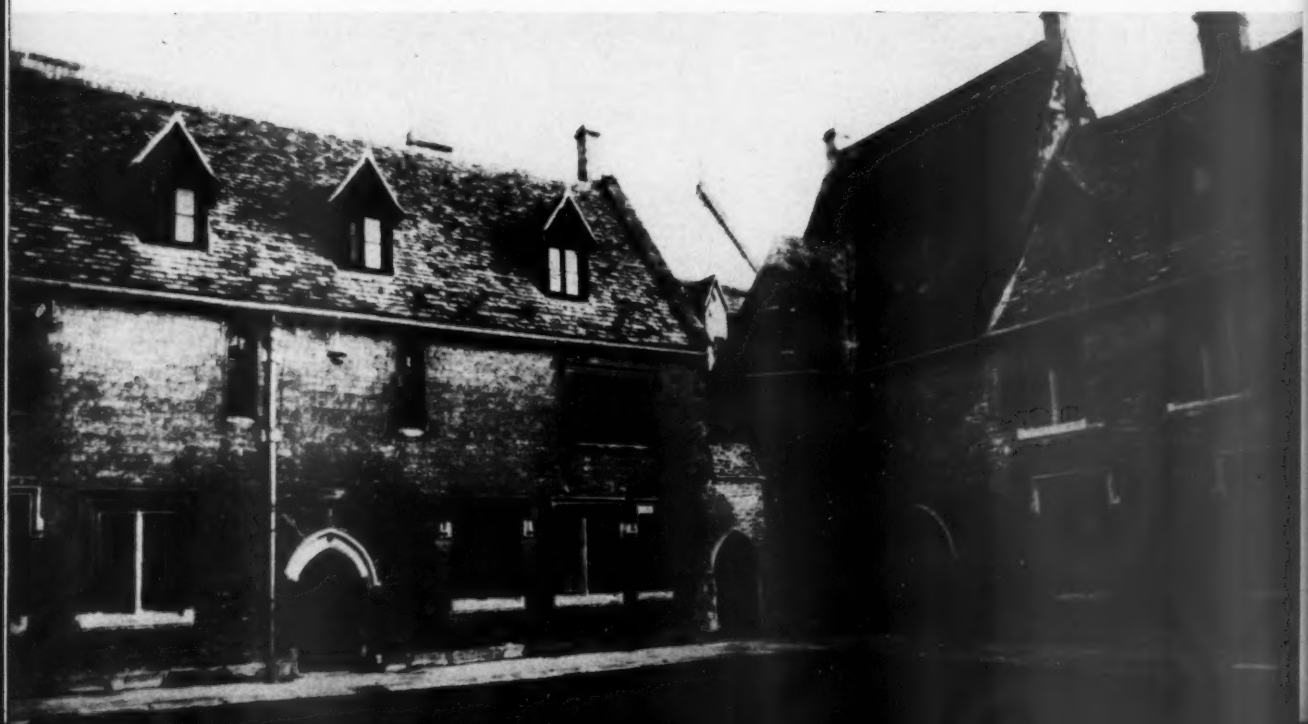
All Souls College is a memorial to those who died in the French War. Nicholas Hawksmoor's twin towers rise above the quad.

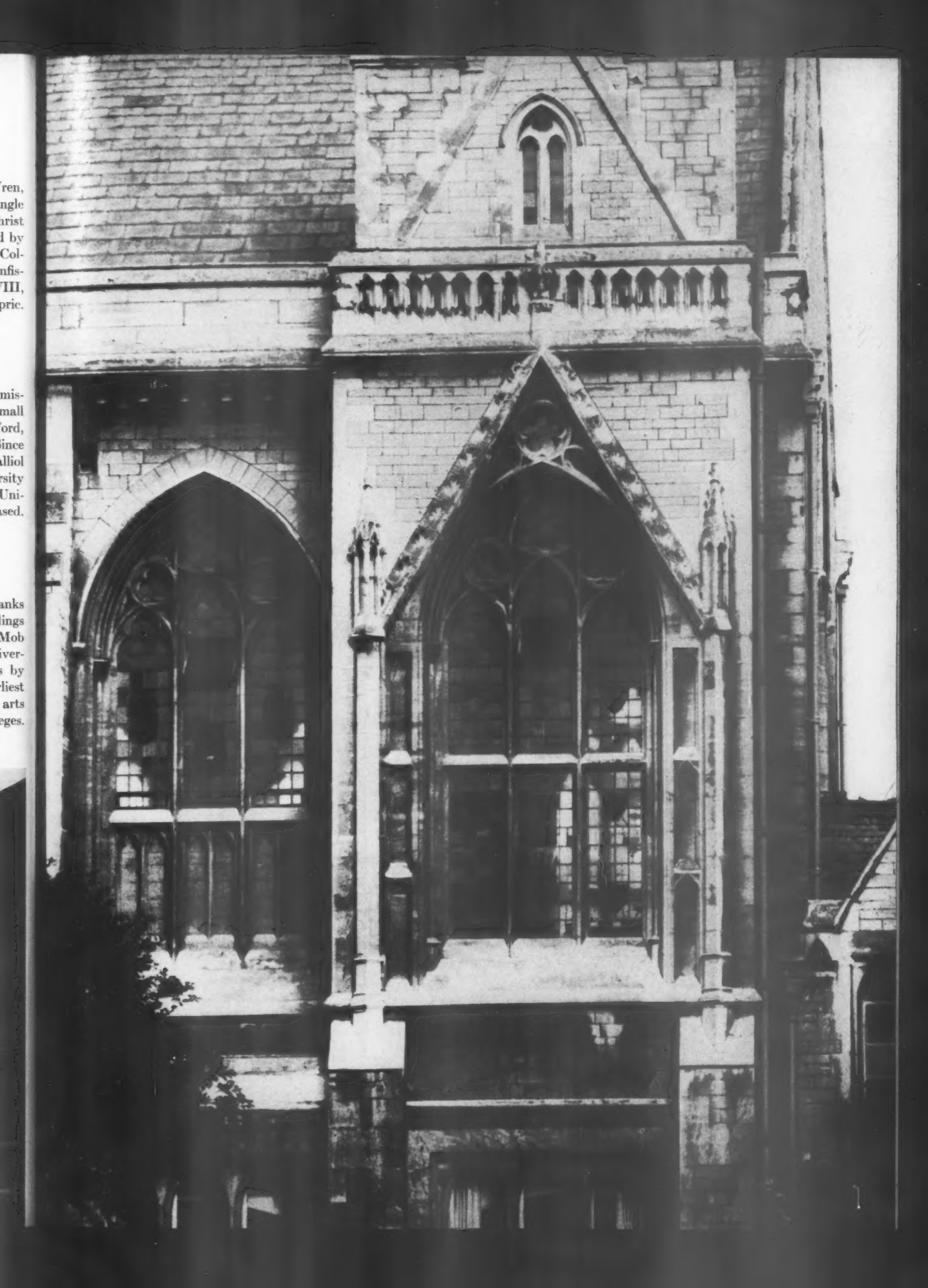
Our Academic Heritage: Oxford

Designed by Sir Christopher Wren, Tom Tower overlooks the quadrangle of Oxford's largest college, Christ Church. The college was planned by Cardinal Wolsey as Cardinal's College but, after his fall, was confiscated and completed by Henry VIII, who joined it to Oxford bishopric.

Condemned to do penance for misconduct, John Balliol began a small community of scholars at Oxford, thus founding its oldest college. Since it received statutes in 1262, Balliol is older than Merton or University Colleges, although the land for University College was the first purchased.

Although Merton (1264) ranks second in age to Balliol, its buildings are the oldest at Oxford. The Mob Quad, pictured below, is the university's oldest. Also, Merton was by far the most important of the earliest colleges; its emphasis on liberal arts set the example for many colleges.



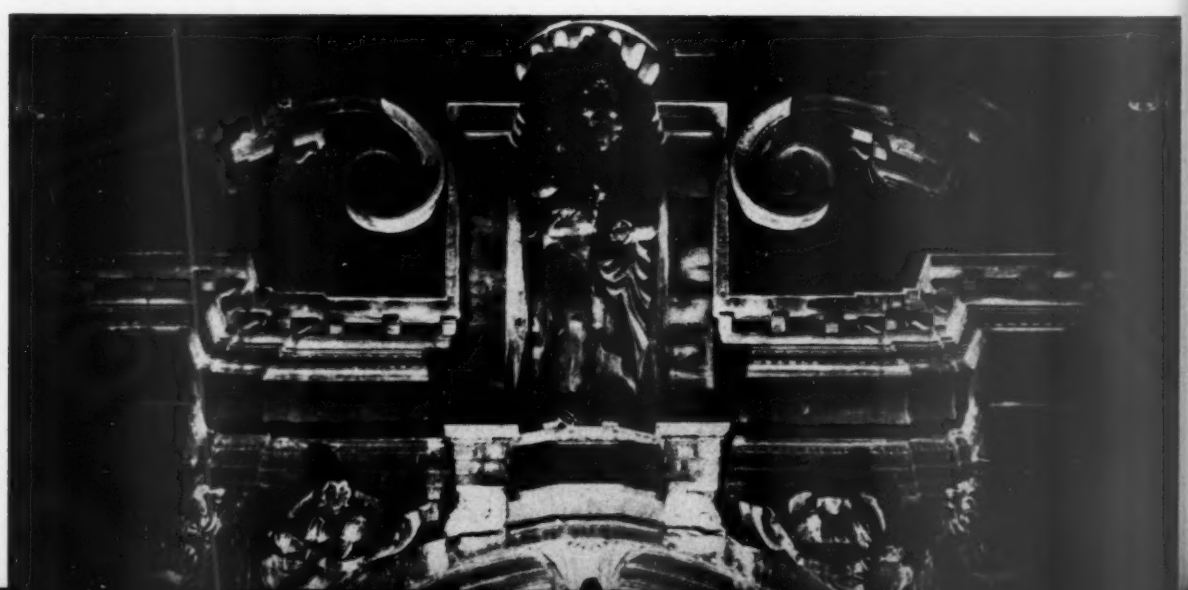


Our Academic Heritage: Oxford

A portion of Magdalen College (founded in 1458) is reflected in the River Cherwell. Built primarily in the fifteenth century, Magdalen was the first college to incorporate cloisters into the quadrangle. The buildings of Magdalen are often cited as among the University's loveliest.

The "Tower of the Five Orders" in the Bodleian Quadrangle is so named because one above the other are pairs of columns representing the five classical orders. The columns are called a "frontispiece" and mark an architectural revolution in the late orthodox gothic design of Oxford.

A statue of St. Mary the Virgin adorns Oxford's official church. The statue and the two angels flanking it were broken up by the Puritans, and the two angels still lack part of their heads. During the Middle Ages, St. Mary's was the scene of such university activities as drama and debating.



THE ENERGY MYSTERY

After centuries of study, scientists are beginning to approach an understanding of the processes that make life possible

By WILLIAM D. McELROY

as told to Ron Wolk

THE SUN is the ultimate source of all energy expended on the earth. Without energy there would be no life.

What is seen from the earth as a dazzling, bright, circular disc is in reality a mass of nuclear reactions—broken atom fragments in violent motion at extreme temperatures (six thousand degrees Centigrade on the surface and twenty-six million degrees in the center)—which result in the transformation of hydrogen into helium. If one per cent of the sun's mass were so transformed, enough energy would be supplied to keep it shining for about one billion years. These nuclear reactions generate enormous amounts of energy, mainly in the form of heat and light, which are ceaselessly radiated throughout the solar system. Though the sun is the source of all life on earth, it is a "dwarf" star and is almost the smallest of the "naked eye" stars.

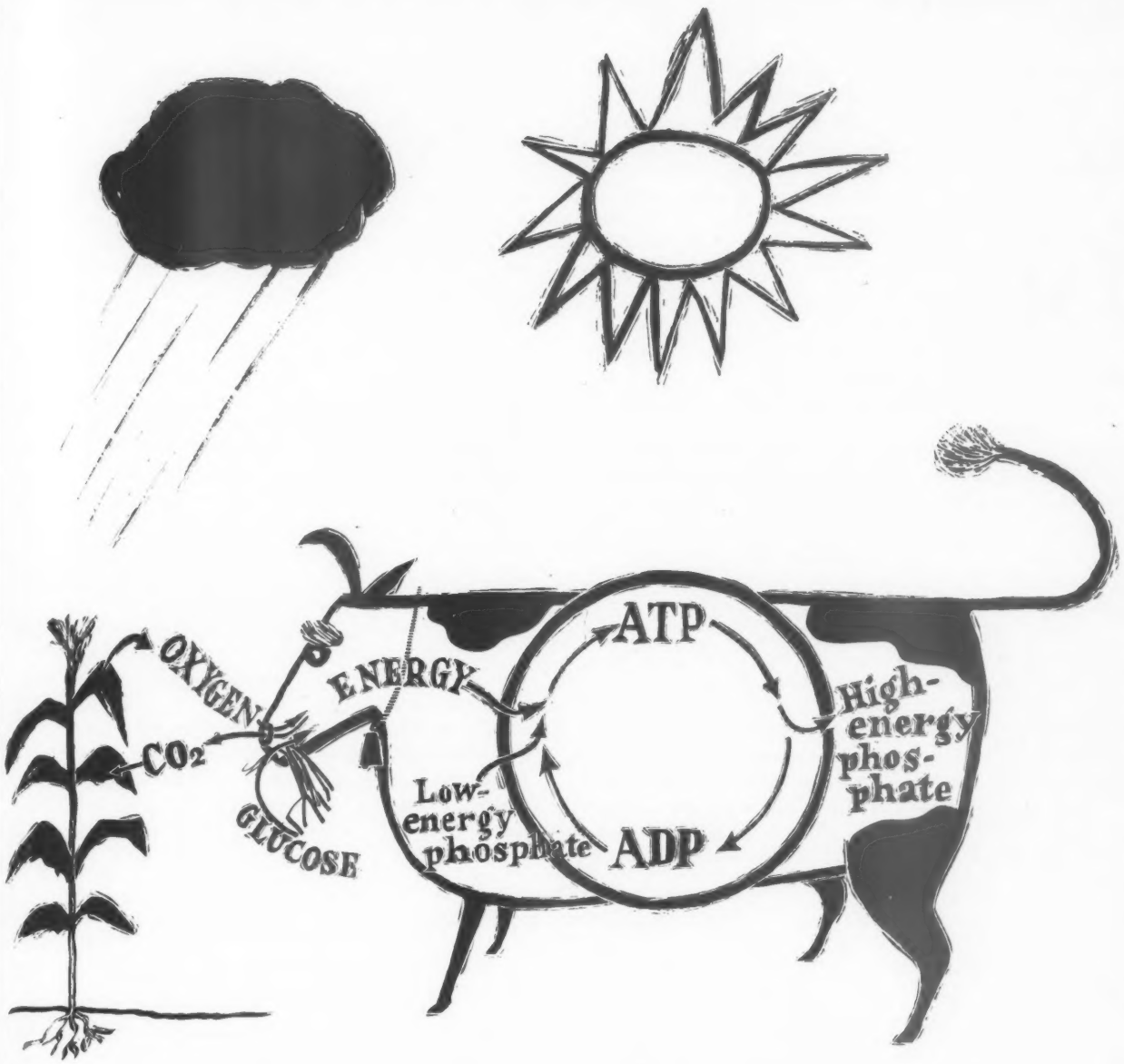
Of this boundless energy radiated by the sun, less than one part in 120 million finds its way to the surface of the earth some ninety-three million miles away. Here it would be useless to organisms were it not for the green chlorophyll in plants, the one substance in all the world with the mysterious power to trap the sun's light energy and use it to make glucose, the chemical energy necessary for the sustenance of life. To make glucose in the process of photosynthesis, the chlorophyll needs, in addition to light, carbon dioxide, water, and certain minerals. In the process of photosynthesis, oxygen and water are liberated, both of which are necessary for animal life. Thus, in metabolizing glucose for cellular use, animals require oxygen (a product of photosynthesis) and release carbon dioxide and water which the green plant needs to make sugar.

SIMPLE as this carbon or energy cycle sounds, it involves a series of highly complex processes which baffle the biochemist. In almost every university biology department, and in other research centers throughout the world, scientists are probing the mysteries of the transformation of energy. In so doing, they are seeking, in a sense, to solve the puzzle of life itself.

Of all such mysteries, one that is both challenging and of great importance involves a chemical found in every life process and necessary for the use of energy in life processes. The chemical is adenosine triphosphate (ATP). It is the substance which enables a firefly to luminesce, a brain to send nerve impulses, a muscle to contract, a cell to divide and grow, a heart to beat, an eye to see. It is the chemical equivalent of light energy—a strangely powerful substance which makes life possible.

To understand the mystery of ATP, it is necessary first to understand the nature of energy and photosynthesis. Energy, roughly defined, is the capacity to perform work. It may be *potential* or *kinetic*. A lake at the top of a mountain has potential energy, as does a boulder at the top of a hill. If the lake overflows its banks, or the boulder is set free, the potential energy becomes kinetic energy, *i.e.*, the motion of matter. As it topples over the mountainside, the water is doing work. If paddle wheels were placed along the mountainside at intervals, the water passing through them would

Dr. McElroy is professor of biology and director of the McCollum-Pratt Institute at Johns Hopkins.



be the source of power to generate electrical energy. Energy, one might say, always runs "downhill." When the water or the boulder reaches the bottom of the mountain, all energy has been expended. Kinetic energy may take many forms: light energy, electrical energy, mechanical energy, chemical energy, or heat.

Although the sun is the ultimate source of all energy on the earth, the light energy it radiates is useless to animal life unless converted into chemical energy, a form of energy essential to life. This conversion is accomplished by chlorophyll, through photosynthesis. The chlorophyll-containing cells of the green plant (chloroplasts) trap the sunlight and use its energy to split water molecules and create energy-rich molecules of oxygen and hydrogen. At this point, energy is given off and ATP appears for the first time in photosynthesis. The oxygen is liberated as a stable molecule, but, through a series of intricate steps, some of the energy-rich hydrogen atoms are combined with carbon dioxide from the atmosphere to form energy-rich glucose and low-energy water.

Some energy-rich hydrogens also react with oxygen to liberate chemical energy, which is stored in the phosphate molecule. The reason for the storage is simply that the plant, like the animal, depends on photosynthesis for life. After the initial step, in which sunlight is used, the plant must resort to chemical energy which it has itself transformed. In darkness, or when leaves fall, the plant requires sugar and oxygen to live, just as the animal does. Each year, the plants of

the earth use the sun's light to combine about 150 billion tons of carbon with twenty-five billion tons of hydrogen and set free some four hundred billion tons of oxygen. The role of land plants in the gigantic production is very slight. Microscopic algae of the oceans carry on ninety per cent of this mammoth chemical industry under water.

MAN, like all animals, is dependent upon the green plant for both food and oxygen. (Only a tiny fraction of the organic material made by plants is used by animals for food. Much more is used by the plant itself, and most of it is decomposed into water, carbon dioxide, and mineral salts by the process of decay.)

Man eats the glucose which the plant has stored. But glucose *per se* cannot be used by living cells. For this reason, man combines it with oxygen, in the process known as respiration, and breaks down the glucose by removing energy-rich hydrogen atoms in steps. At each step, energy is given off—just as in the fall of water over the mountainside. This energy is trapped as *phosphate bond energy*, about which more will be said later.

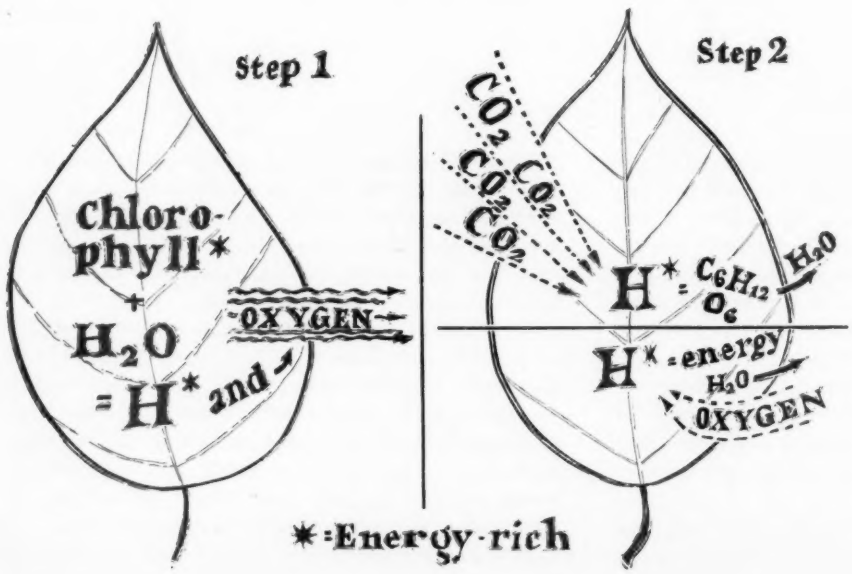
In man, the steps at which the hydrogen atoms are removed from glucose and energy is liberated are mediated by the vitamins. The process of releasing energy for cellular use in the breakdown of glucose is a part of the process called *metabolism*. The human cell is seventy per cent efficient in capturing freed energy from the metabolism of glucose. (Most man-made machines succeed in using only about thirty per cent of the energy released to drive them.) One important phase of glucose metabolism begins with niacin (a B Vitamin), which catalyzes a reaction in which hydrogens are removed and energy is first given off and trapped as phosphate bond energy. The niacin then transfers the hydrogen, now less energy-rich, to riboflavin, the second B Vitamin instrumental in energy release, where the process is repeated. From riboflavin, the hydrogens are transferred to the cytochrome system (iron). Here the last of the energy-rich phosphates are liberated, and the hydrogens finally combine with oxygen to form the low-energy water.

JUST HOW this energy-rich phosphate is liberated from the reactions in which the vitamins act as catalysts, and why it is phosphate rather than some other substance, is a mystery. But the biochemist does know that energy is trapped as phosphate bond energy. And he also knows that the trapped energy is immediately picked up by *inorganic* phosphate, which then combines with adenosine diphosphate (ADP) to become the strange and powerful ATP. The efficiency of the cell in capturing energy, as mentioned above, is explained by the fact that no more energy is released from the glucose at any one time than can be picked up by inorganic phosphate.

ATP, then, is a molecule which consists of two energy-rich phosphate groups and one low-energy phosphate group, fastened by a chemical bond to adenosine, an important biological chemical. This bond is considered a sort of "cement" of electrons holding the phosphate

Continued on page 29

MIRACLE IN A GREEN LEAF



CHLOROPHYLL, excited by sunlight, splits water into energy-rich hydrogen and oxygen. This first step in photosynthesis is still a puzzle to biochemists. In the second step, some of the energy-rich hydrogen combines with carbon dioxide to form glucose, the chemical energy needed by man and animals. Other hydrogen simultaneously combines with oxygen to produce energy for the plant's use. Water is given off in both processes in Step 2.

STEP BY STEP INTO LIFE'S SECRETS

STEPHEN HALES, an English physiologist, is thought of as the first person to question the belief, held since the time of Aristotle, that plants derive their nourishment from the soil. In 1727, Hales suggested that plants take some part of their nourishment from the air, and added the interesting afterthought that light also probably plays some part.

ALMOST a century earlier, however, a Flemish chemist and physician, Jan Baptista van Helmont, inventor of the word *gas* (suggested to him by the Greek word *chaos*), showed that a potted plant gained weight which could not be accounted for by withdrawal of food from the soil in the pot. He discovered that a willow tree gained pounds in five years, while the soil lost only ounces. He thus concluded that the plant takes up either atmospheric gases or water or both.

THE first great contribution to man's knowledge of photosynthesis came in 1771, when Joseph Priestley, discoverer of oxygen, proved in a simple experiment that a plant takes up "fixed" air (carbon dioxide) from the atmosphere and releases "good" air (oxygen). Priestley placed a living mouse under one glass jar, and a green plant under another. Both died. He then placed a mouse and a green plant under the same jar and discovered that the carbon dioxide breathed out by the mouse supplied the plant with material for photosynthesis, which released oxygen to suffice for the respiration of both mouse and plant. Amazing as this information was, it was not immediately understood.

A FEW YEARS later, Jan Ingenhousz, Dutch physician to the Austrian Empress Maria Theresa, discovered that light plays an important part in photosynthesis. Ingenhousz confirmed that the plant purifies air, but discovered that the purifying result of photosynthesis takes place only in light; in darkness, the plants, like animals, cause the air to become foul. Ingenhousz was so impressed by his observation that he advised the removal of plants and flowers from bedrooms at night—a practice still observed by some people.

A GENEVA PASTOR named Jean Senebier learned in 1782 that this "noxious" gas produced by animals (carbon dioxide) was essential to the green plant in producing "good" air. These important discoveries took on new meaning when they were collected and interpreted into chemical language by the French chemist and father of modern chemistry, Antoine Lavoisier. Green plants exposed to light absorb carbon dioxide and liberate oxygen, he said.

Lavoisier's announcement, however, had an inevitable question built into it: If a plant releases the oxygen of carbon dioxide, what happens to carbon, the other constituent? Again Ingen-Housz supplied the correct answer by stating, in 1796, that the carbon is the basis of plant nutrition; *i.e.*, photosynthesis is not simply to purify air for man and other animals, but first of all is to assimilate carbon for the benefit of the plant.

AN IMPORTANT part of the puzzle of photosynthesis was still missing. In 1804, the chemist and naturalist Nicolas Théodore de Saussure found that in addition to carbon dioxide, water is also used by the plant to produce *organic matter*.

By the beginning of the nineteenth century, then, a chemical definition of photosynthesis had been established: carbon dioxide + water + light in the green plant produces oxygen + organic matter. It was almost half a century later, though, that the organic matter was found to be a carbohydrate. In 1845, the German discoverer of the conservation of energy principle, Julius Robert von Mayer, wrote:

"Nature set herself the task to catch in flight the light streaming towards the earth, and to store this, the most evasive of all forces, by converting it into an immobile form. To achieve this, she has covered the earth's crust with organisms, which while living take up the sunlight and use its force to add continuously to a sum of chemical difference.

"These organisms are the plants: the plant world forms a reservoir in which the volatile sun rays are fixed and ingeniously laid down for later use; a providential economic measure, to which the very physical existence of the human race is inexorably bound."

In short: the main physical function of photosynthesis is the conversion of light energy into chemical energy.

IN THE hundred or so years since Mayer, thousands of botanists, chemists, physiologists, biologists, biochemists, and other scientists have studied the problems of photosynthesis, often following the intriguing side roads which their study revealed. Of the progress made (and it has been considerable), perhaps the greatest is the discovery that there are even more perplexing mysteries than had been anticipated—mysteries which seem to lead to the very basis of life.

The thought of Christmas in a hospital is sad. But the actuality isn't so depressing, after all.

Some little boys and girls are afraid Santa will not think to look for them in the Hospital. But look!

With a thrilled youngster on his shoulder, Santa makes his hospital rounds shortly after dawn.

Before dawn, student nurses gather for coffee in Hampton House lounge at Johns Hopkins, then go through the Hospital corridors caroling.

Having lavished special care on the Christmas turkey, the Hospital chef personally delivers it. Children's delight makes it all worth while.

Photographs by

There are special presents in this area of the Hospital. The decoration on the nursery door sums it up for parents of Christmas-Day babies.

Homemade decorations appear everywhere in the Hospital. But serious work goes on. At right, a Christmas Eve scene: Santa and stethoscope.

Robert Mottar

A Johns Hopkins Gazette

AN UNOFFICIAL COMPENDIUM OF FACULTY AND ALUMNI APPOINTMENTS, HONORS, AND ACCOMPLISHMENTS

BOOKS

WALTER J. BURDETTE, house staff '42–'43 (surgery), editor: *Etiology and Treatment of Leukemia* (C. V. Mosby, $4).

NATHAN DRAZIN, PH.D. '37 (education): *Marriage Made in Heaven* (Abelard-Schuman, $3).

GEORGE GAMOW, fac. '34–'35 (physics): *Matter, Earth, and Sky* (Prentice-Hall, $10).

HENRY N. HARKINS, FAC. '43–'47 (surgery), JONATHAN E. RHOADS, M.D. '32, J. Garrott Allen, and Carl A. Moyer: *Principles of Internal Medicine* (Lippincott, $16).

LOUIS HAUSMAN, fac. '20–'22 (psychiatry): *Clinical Neuroanatomy, Neurophysiology, and Neurology* (Thomas, $9.75).

EDWARD COUNSELMAN HIGBEE, PH.D. '49, fac. '48–'49 (geography): *The American Oasis* (Knopf, $5).

JOHN H. KYLE, editor of the Johns Hopkins Press: *The Building of TVA: An Illustrated History* (Louisiana State University Press, $7.50).

ELMER VERNER MCCOLLUM, LL.D. '51 (hon.), professor emeritus of biochemistry: *A History of Nutrition* (Houghton Mifflin, $6).

G. CANBY ROBINSON, B.A. '99, M.D. '03, lecturer emeritus of medicine and preventive medicine: *Adventures in Medical Education* (Harvard, $5).

JOSEPH WILLIAM STILL, M.P.H. '41: *Science and Education at the Crossroads* (Public Affairs Press, $3.25).

Following is the fall list of books published by the Johns Hopkins Press, with the approximate publication dates:

WILFRED E. BINKLEY: *The Man in the White House: His Powers and Duties* ($6, December).

ALAN M. CHESNEY: *The Johns Hopkins Hospital and the Johns Hopkins University School of Medicine: A Chronicle, Volume 2, 1893–1905* ($6, September).

GORDON A. CRAIG: *From Bismarck to Adenauer: Aspects of German Statecraft* ($4.50, October).

HENRY JARRETT, editor: *Perspectives on Conservation* ($5, December).

LUDWELL H. JOHNSON: *Red River Campaign* ($5, November).

SUSANNE K. LANGER: *Reflections on Art* ($6.50, November).

WILLIAM D. MCELROY and BENTLEY GLASS: *The Chemical Basis of Development* ($12.50, December).

MARC LEON NERLOVE: *The Dynamics of Supply* ($4 paper, $5 cloth, October).

VERA RILEY and SAUL I. GASS: *Linear Programming and Associated Techniques* ($6 paper, July).

LOUISE C. SEIBERT and LESTER G. CROCKER: *Skills and Techniques for Reading French* ($4.50, December).

BIOLOGIST

ALAN J. BEARDEN

Herman Kalckar

(*See "Faculty"*)

THE FACULTY

IN THE FACULTY OF PHILOSOPHY, WILLIAM FOXWELL ALBRIGHT, fellow '13–'14, Rayner Fellow '14–'16, PH.D. '16 (Oriental seminary), Johnston Scholar '17–'18, Rayner Fellow '18–'20, William Wallace Spence professor of Semitic languages '29–'58, has retired as professor of Semitic languages and chairman of the Oriental seminary. Dr. Albright is now William Wallace Spence professor emeritus of Semitic languages. He has been awarded the honorary degree of doctor of letters by Loyola College in Baltimore.

DONALD H. ANDREWS, B. N. Baker professor of chemistry, has been appointed chairman of the Maryland Great Decisions Committee, which will sponsor an eight-week discussion program on critical policy decisions facing the United States.

WILLIAM S. BURFORD, M.A. '55 (writing), G. '55–'58 (aesthetics of literature), fac. '55–'58 (writing seminars), has been appointed assistant professor of English at the University of Texas.

ALPHONSE CHAPANIS, professor of psychology and industrial engineering, has been elected president of the Society of Engineering Psychologists.

CLIFTON C. CHERPACK, M.A. '51, PH.D. '53 (Romance languages), assistant professor of Romance languages, has resigned to accept a position as associate professor of Romance languages at Duke University.

JAMES E. DEESE, professor of psychology, is on leave of absence this year to serve as visiting professor of psychology at the University of California at Berkeley.

VINCENT G. DETHIER, professor of biology, has resigned to become professor of biology at the University of Pennsylvania.

JOSEPH D. H. DONNAY, professor of crystallography and mineralogy, is on leave of absence for 1958–59 on a Fulbright grant to lecture at the University of Paris.

CHARLES EDWARDS, B.A. '45, M.A. '48 (physics), PH.D. '53 (biophysics), fac. '55–'58 (biophysics), has been appointed research assistant professor of physiology at the University of Utah College of Medicine.

REED L. FRISCHKNECHT, legislative assistant to U. S. Senator Arthur V. Watkins, will be visiting professor of political science for 1958–59.

HERMAN KALCKAR has been appointed professor of biology and a member of the staff of the McCollum-

Pratt Institute. Dr. Kalckar comes from the National Institutes of Health in Bethesda, Maryland.

SIMON KUZNETS, professor of political economy, is on leave of absence for 1958–59 to accept the post as Taussig research professor at Harvard University.

STERLING P. LAMPRECHT, visiting professor of philosophy, has been awarded a Fulbright scholarship for 1958–59.

FRIEDERICH I. MAUTNER, professor of mathematics, will be on sabbatical leave in 1958–59 and will lecture at the University of Paris and the University of Göttingen.

MANFRED M. MAYER, associate professor of microbiology, has been awarded the fifth annual Selman A. Waksman Lectureship Award of the Theobald Smith Society, the New Jersey Branch of the Society of American Bacteriologists.

ELMER V. MCCOLLUM, LL.D. '51 professor emeritus of biochemistry, recently received the Centenary Award of Borden Company Foundation for his contributions to the science of nutrition.

WILLIAM D. MCELROY, professor of biology and director of the McCollum-Pratt Institute, has been appointed a member of the Board of School Commissioners of Baltimore.

MALCOLM C. MOOS, professor of political science, has been named administrative assistant to President Dwight D. Eisenhower.

JOSE FERRATER MORA, professor of philosophy and Spanish at Bryn Mawr College, is visiting professor of Romance languages for 1958–59.

W. KELSO MORRILL, B.A, '25, M.A. '27, PH.D. '29 (mathematics), has been appointed dean of students. He continues as associate professor of mathematics.

MARC L. NERLOVE, M.A. '55, PH.D '56 (political economy), has been appointed visiting lecturer in political economy for the first term.

ALAN T. PEACOCK, professor of economic science at the University of Edinburgh, is visiting professor of political economy for the first term.

MARK PERLMAN, associate professor of political economy, will be director of the program of business and industrial management.

CHARLES S. SINGLETON, professor of humanistic studies, has received the Order of Merit of the Italian Republic for his scholarship on the Italian poet, Alighieri Dante.

JOHN M. STEPHENS, professor of education and psychology, is on leave of absence for the first term of 1958–59 to be visiting professor of education at the University of California at Berkeley.

CARL BRENT SWISHER, professor of political science, has been named president-elect of the American Political Science Association.

EMIL H. WHITE, assistant professor of chemistry, has been granted a Guggenheim Fellowship for 1958–59 and will be at the Eidgenossiche Technische Hochschule, Zurich, Switzerland.

BENJAMIN H. WILLIER, Henry Walters professor of zoology since 1940, has been made Henry Walters professor emeritus.

The following have been promoted to the rank of assistant professor: MALCOLM S. STEINBERG, in biology; MICHAEL BEER, in biophysics; JAMES K. KINDAHL, in political economy; JOSEPH S. ULLIAN, in philosophy; and FREDERICK W. GRANT, JR., in chemistry.

IN THE SCHOOL OF HYGIENE AND PUBLIC HEALTH, JEROME CORNFIELD, assistant chief of the biometrics branch, division of research services, National Institutes of Health, has been appointed professor and chairman of the department of biostatistics, and professor of biomathematics in the School of Medicine.

EDWARD GRZEGORZEWSKI, M.P.H. '33, visiting professor '58 (public health administration), has been appointed head of the department of preventive medicine and public health at the University of Puerto Rico.

PAUL A. LEMBCKE, M.P.H. '37, associate professor of public health administration, has been appointed professor of preventive medicine and public health at the University of California in Los Angeles.

DONALD B. MCMULLEN, SC.D. '35, lecturer in pathobiology, has been appointed to the World Health Organization to study methods for preventing the spread of schistosomiasis in hydroelectric, irrigation, and drainage projects in the Middle East and Africa.

WINSTON H. PRICE, associate professor of biochemistry and epidemiology, has been chosen Young Man of the Year by the Drug, Chemical, and Allied Trades Section of the Young Men's Board of Trade in New York.

The following promotions have been announced: LLOYD E. ROZEBOOM, SC.D. in Hygiene '34, to professor of medical entomology; RICHARD D. HAHN, B.A. '32, M.D. '36, to associate professor of public health administration (he is also assistant professor of medicine); HENRY J. MARK, SC.D. in Hygiene '56, to assistant professor of environmental medicine (he is also instructor in laryngology and otology); and RUTH-ALICE DAVIS, M.P.H. '58, to assistant professor of public health administration (she is also instructor in pediatrics).

The title of Director of the School of Hygiene and Public Health has been changed to that of Dean of the School.

IN THE ADMINISTRATION—HAROLD E. INGLE, director of the Johns Hopkins Press, has been named president-elect of the Association of American University Presses.

WILLIAM F. LOGAN, B.A. '27, G. '27–'28 (geology), is now director of admissions and financial aid.

AMONG MEMBERS OF THE BOARDS OF TRUSTEES, DETLEV WULF BRONK has received the honorary degree of doctor of laws from Miami University, Oxford, Ohio. Dr. Bronk, former president of Johns Hopkins, has been reappointed to the National Science Board of the National Science Foundation.

J. CROSSAN COOPER, JR., has been made a trustee of Penn Mutual Life Insurance Company of Philadelphia.

DEVEREUX C. JOSEPHS has been awarded the honorary degree of doctor

CONTINUED ON NEXT PAGE

BIOMATHEMATICIAN

ALAN J. BEARDEN

Jerome Cornfield

(*See "Faculty"*)

A Johns Hopkins Gazette

CONTINUED

of laws by Princeton University and Yale University.

AT THE SCHOOL OF MEDICINE, EDWARD C. ANDREWS, JR., M.D. '51, fac. '51–'58, staff '51–'53, '56–'58, house staff '52–'56 (pathology), has been appointed associate professor of pathology at the University of Vermont.

FREDERICK W. BARNES, JR., M.D. '34 associate professor of medicine, has been named director of education and research and chief of medicine at Women's Hospital in Baltimore.

IVAN L. BENNETT, fac. '49–50 (pathology), '54–'57 (medicine), has been appointed Baxley professor of pathology and director of the department of pathology.

FERNANDO G. BLOEDORN, associate professor of radiology at the University of Maryland and head of the division of radiotherapy at University Hospital, has been appointed assistant professor of radiology.

JEROME D. FRANK, associate professor of psychiatry, has been awarded a fellowship at the Center for Advanced Study in the Behavioral Sciences for 1958–59.

DAVID GROB, M.D. '42, G. '46–48 (biology), associate professor of medicine, has been named professor of medicine at the State University of New York College of Medicine.

SVEN NISSEN-MEYER, associate professor of tuberculosis at the University of Oslo, has been appointed associate professor of epidemiology.

KEEN A. RAFFERTY, JR., has been appointed assistant professor of anatomy.

ARNOLD RICE RICH, M.D. '19, Baxley professor of pathology and director of the department of pathology, has retired after thirty-nine years of service in that department. Dr. Rich became Baxley professor in 1944 and was appointed director of the department in 1947. He has been named Baxley professor emeritus of pathology. Dr. Rich was recently awarded the George M. Kober Award from the Association of American Physicians.

RICHARD H. SHRYOCK, William H. Welch professor of the history of medicine, '49–'58, lecturer in public health administration '56–'58, director, Institute of the History of Medicine, '49–'58, has resigned his position at Johns Hopkins to become librarian of the American Philosophical Society in Philadelphia. OWSEI TEMKIN, fac. '32–'57 (history of medicine), acting director of the Welch Medical Library '45–'46, has been appointed William H. Welch professor of the history of medicine and director of the Institute of the History of Medicine.

I. RIDGEWAY TRIMBLE, M.D. '26, house staff '26–'27 (pediatrics), '27–'33 (surgery), associate professor of surgery and assistant professor of anatomy, recently visited more than twenty Army hospitals in the European command as consultant for the Surgeon General of the Army.

A. EARL WALKER, professor and director in the department of neurosurgery, has been appointed to the Board of Scientific Counselors of the National Institute of Neurological Diseases and Blindness.

FRANK B. WALSH has been promoted to professor of ophthalmology.

E. DAVID WEINBERG, M.D. '22, house staff '23–'26 (orthopedic surgery), assistant professor of orthopedic surgery, has been appointed chief of staff of South Baltimore General Hospital.

The following have been appointed to emeritus status: LAY MARTIN, M.D. '20, associate professor emeritus of medicine; FRANK R. FORD, B.A. '15, M.D. '20, associate professor emeritus of neurological medicine; W. HORSLEY GANTT, associate professor emeritus of psychiatry; LEO BRADY, B.A. '13, M.D. '17, assistant professor emeritus of gynecology; LAWRENCE R. WHARTON, M.D. '15, assistant professor emeritus of gynecology; NATHAN B. HERMAN, B.A. '14, M.D. '18, assistant professor emeritus of medicine; WALTER L. DENNY, assistant professor emeritus of urology; CHARLOTTE MCCARTHY, instructor emeritus of medicine; and LOUIS SACHS, B.A. '14, M.D. '18, instructor emeritus of surgery.

The following have been promoted to the rank of associate professor: J. DONALD WOODRUFF, M.D. '37, in gynecology; WALTER L. WINKENWERDER, M.D. '27, in medicine; CHARLES E. ILIFF, JR., M.D. '39, in ophthalmology; DAVID B. CLARK, in neurological medicine and pediatrics (also reappointed assistant professor of neurological pathology); LEON EISENBERG, in psychiatry and pediatrics; ROBERT G. LANGDON, in physiological chemistry; JOHN L. HAMPSON, M.D. '46, in psychiatry (also reappointed assistant professor of medicine); ROBERT J. DICKSON, in radiology; JOHN G. MCAFEE, in radiology; GEORGE O. GEY, M.D. '33, in surgery (also reappointed lecturer in pathobiology in the School of Hygiene and Public Health); ALFRED T. LIEBERMAN, in otology and laryngology; DONALD F. PROCTOR, in laryngology and otology (also reappointed assistant professor of physiology); and RAYMOND E. LENHARD, B.A. '18, M.D. '22, in orthopedic surgery.

The following have been appointed to positions on the Medical School faculty: THOMAS C. BRUICE, assistant professor of physiological chemistry; DONALD N. MEDEARIS, JR., assistant professor of pediatrics; WILLIAM L. NYHAN, assistant professor of pediatrics; KEEN A. RAFFERTY, JR., assistant professor of anatomy; and ROBERT G. PETERSDORF, assistant professor of medicine.

The following people have been promoted to the rank of assistant professor: EDWARD W. HOOK, JR., in medicine; ALBERT H. OWENS, JR., B.A. '49, M.D. '49, in medicine (also appointed instructor in pathobiology at the School of Hygiene and Public Health); THADDEUS E. PROUT, in medicine; W. GORDON WALKER, in medicine; BERNARD ROIZMAN, SC.D. in Hygiene '56, in microbiology (holds same position in School of Hygiene and Public Health); JAMES R. DUKE, M.D. '48, in ophthalmology; WILLIAM G. MARR, M.D. '42, in ophthalmology; L. HARRELL PIERCE, in ophthalmology; TORSTEN N. WIESEL, in ophthalmic physiology; JAMES W. WOODS, B.A. '49, PH.D. '54 (physiology), in physiology; MANFRED S. GUTTMACHER, B.A. '19, M.D. '23, in psychiatry; JOHN B. IMBODEN, M.D. '50, in psychiatry (he is also instructor in medicine); JAMES P. ISAACS, M.D. '49, in surgery (he is also John and Mary Markle Foundation scholar in medical science); FRANCIS I. CATLIN, M.D. '48, in laryngology and otology; M. LEE WILLIAMS, in laryngology and otology; W. RICHARD FERGUSON, M.D. '36, in orthopedic surgery; EDMOND J. MCDONNELL, in orthopedic surgery; JAMES P. MILLER, in orthopedic surgery; THOMAS

A. Stamey, in urology; Gabriel F. Tucker, Jr., M.D. '51, in laryngology and otology; and Stewart M. Wolff in ophthalmology.

In the School of Engineering, Robert S. Ayre, professor and chairman of the department of civil engineering, has been appointed professor and chairman of the department of civil engineering at Robert College, Istanbul, for 1958–59 and will hold the same titles at Yale University in 1959–60.

Oscar W. Dillon, Jr., has been appointed assistant professor of civil engineering. He is a graduate of the University of Cincinnati.

William H. Hoppmann, II, associate professor of mechanical engineering, has been appointed professor of mechanical engineering at Rensselaer Polytechnic Institute.

Abba P. Lerner, visiting professor '57–'58 (political economy), has been appointed visiting professor of political economy at University of California.

Hershel Markovitz, senior fellow at Synthetic Rubber Properties, Mellon Institute, has been appointed visiting lecturer in mechanical engineering.

Jerzy Leon Nowinski, lecturer in mechanical engineering during the previous academic year, has acepted the position of adjunct professor attached to the mathematics research center at the University of Wisconsin.

J. Trueman Thompson, B.S. in Eng. '17, fac. '19–'58 (civil engineering), has been made professor emeritus of civil engineering.

At the Applied Physics Laboratory, Joseph F. Bird has joined the senior staff.

E. Arthur Bonney has resigned to enter the Presbyterian ministry.

Vivian O'Brien, M.A. '50 (mathematics), M.S.E. '54 (aeronautics) has been awarded the Amelia Earhart Medal and Scholarship by Zonta International, an international organization of executive women. Miss O'Brien will continue her studies in the field of fluid dynamics and aerodynamics in the department of aeronautics.

A. Rivington Stone has received an honorary degree in mechanical engineering from Stevens Institute of Technology, Hoboken, New Jersey.

Frank L. Verwiebe has left the staff to teach at Montgomery Junior College in Silver Spring, Maryland.

Rufus W. West and Dr. Philip M. Whitman, senior staff members in the Applied Physics Laboratory, have been named by Dr. Milton S. Eisenhower as recipients of the William S. Parsons Fellowship for the academic year 1958–59.

At the Institute for Coöperative Research, Louis J. Frisco, B.E. '49, M.S. '53 (electrical engineering), assistant resident contract director '52–'58, has been promoted to research contract director.

At the Operations Research Office, Josiah Macy, Jr., staff member '54–'58 (ORO), has been promoted to assistant professor of physiology at Yeshiva University.

Thornton L. Page, deputy director of the Operations Research Office, has resigned to accept an appointment as professor of astronomy at Wesleyan University in Middletown, Connecticut.

THE ALUMNI

Cyril Edward Abbott, G. '26–'27 (zoology), has been appointed chairman of the department of biological sciences at Georgia Southwestern College in Americus, Georgia.

Osler A. Abbott, M.D. '37, house staff '36, '38–'39 (ophthalmology and gynecology), associate clinical professor of thoracic surgery, Emory University School of Medicine, has been named president-elect of the American College of Cardiology.

Paul C. Adkins, B.A. '46, M.D. '48, has been appointed a resident in surgery at the George Washington University Hospital.

Robert Lawrence Airth, fellow '55–'58 (McCollum-Pratt), has been appointed assistant professor of botany at the University of Texas.

John W. Athens, M.D. '48, fellow '49–'50 (medicine), has been promoted to assistant professor of medicine at the University of Utah College of Medicine.

Lenox D. Baker, fac. '35–'37 (orthopedic surgery), house staff '33–'37 (surgery, orthopedics), has been appointed to the medical committee of President Eisenhower's Committee on Employment of the Physically Handicapped.

Allen W. Becker, PH.D. '56 (English), has been appointed headmaster of St. Stephen's Episcopal School in Austin, Texas.

Donald S. Bittinger, B.E. '32, has been elected president of the Washington (D. C.) Gas Light Company.

Frank Bowers, G. '13–'14, '15–'18 (history), has been appointed vice-principal of Baltimore Polytechnic Institute.

Morris Ellis Brodwin, M.S. in Eng. '51, Dr.Eng. '57 (electrical), fac. '57–'58 (electrical engineering), '50–'51, '52–'58 (ICR), has been appointed associate professor of electrical engineering at Northwestern University.

Chris J. Brous, engineering '37–'38, has joined Atomics International, a division of North American Aviation, Inc., as assistant chief of engineering.

Myron I. Buchman, M.D. '46, house staff '46–'47 (gynecology), has been appointed assistant professor of radiology at Cornell University Medical College.

Leroy E. Burney, M.P.H. '32, Surgeon General of the United States, has been elected president of the World Health Organization.

Richard H. Bussard, B.E. '29, has been elected vice-president-operations of the Washington (D.C.) Gas Light Company.

Robert W. Cairns, PH.D. '32, G. '32–'33 (chemistry), has been elected a member of the board of trustees of the Gordon Research Conferences.

Michael R. Campo, M.A. '53, PH.D. '54 (Romance languages), assistant professor of Romance languages at Trinity College, has been elected a member of the Dante Society of America. He has also been named executive director of the newly formed Cesare Barbieri Center for the promotion of Italian studies at Trinity College.

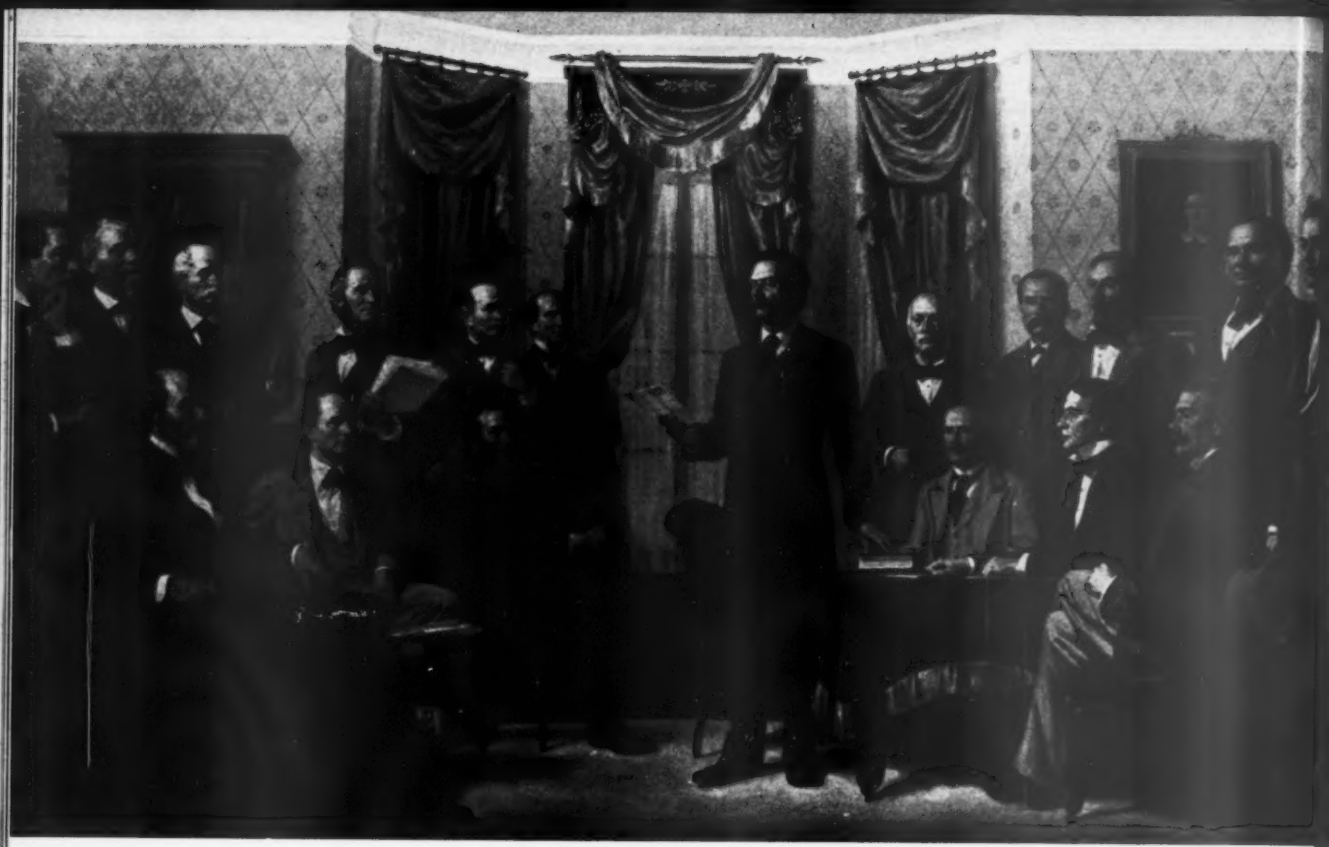
George E. Cartwright, fac. '44, house staff '43–'44 (medicine), has been appointed professor of medicine at the University of Utah College of Medicine.

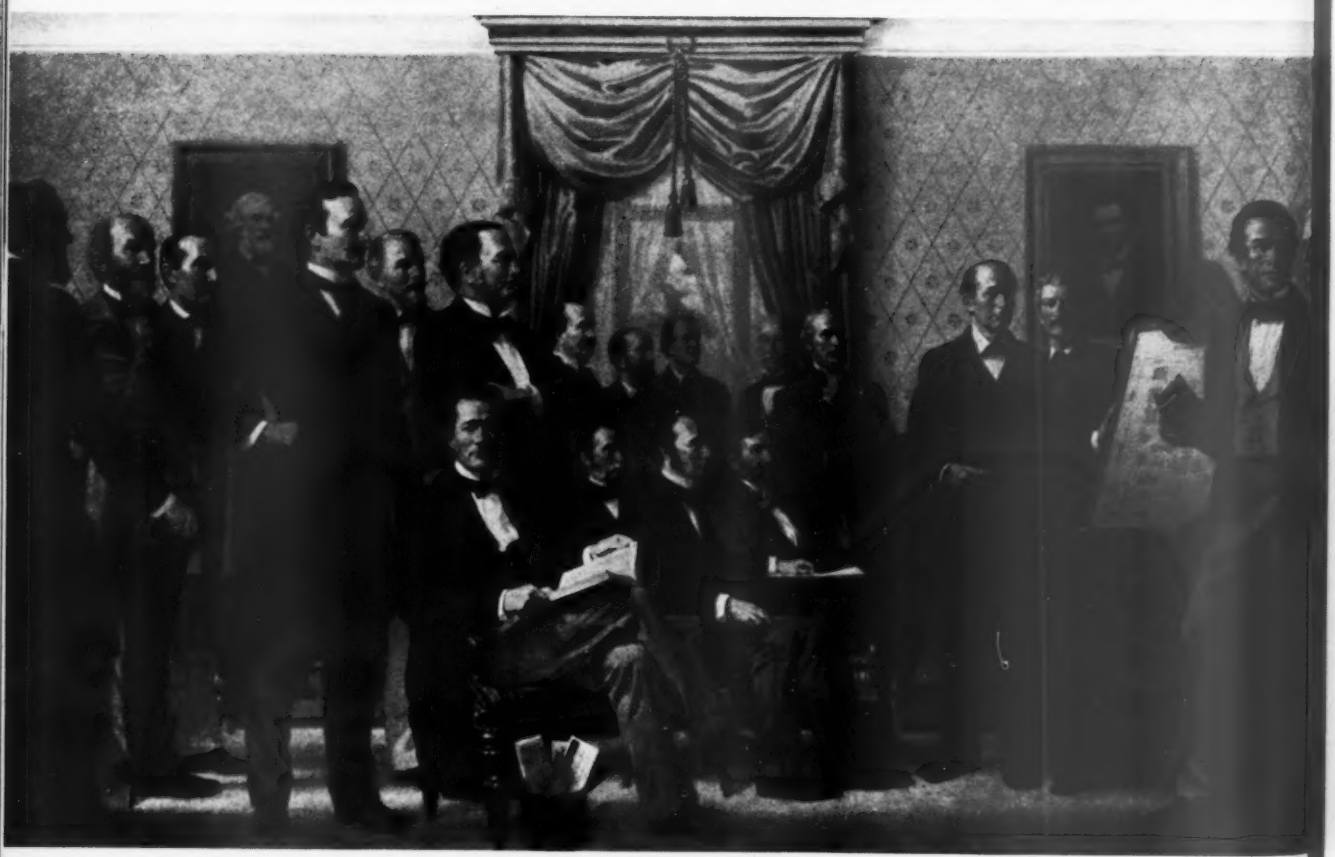
Paul C. Colonna, M.D. '20, has retired as chairman of the department of orthopedic surgery at the University of Pennsylvania School of Medicine.

Elbert DeCoursey, M.D. '28, commandant of the Army Medical Service School at Brooke Army Medical Center, has been reappointed to the Council on Research and Education by the board of trustees of the American Hospital Association.

Wilmer A. Dehuff, fac. '19–'21 (civil engineering), has joined the staff of the University of Baltimore as educational consultant, advising on teach-

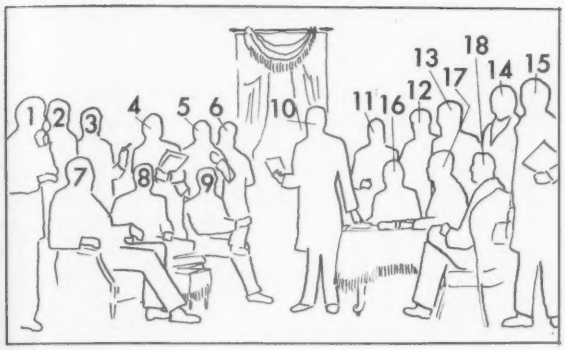
Continued on page 26





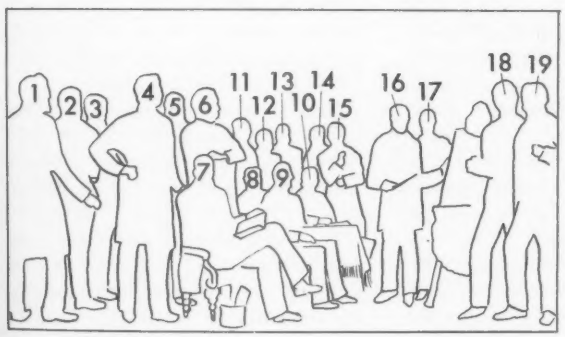
Last of the Shriver Murals

The First University Trustees



1. Charles J. M. Gwinn
2. Charles Morton Stewart
3. J. Hall Pleasants
4. William Hopkins
5. Thomas M. Smith
6. John Fonerden
7. George W. Dobbin
8. Francis T. King
9. Robert Garrett
10. Reverdy Johnson, Jr.
11. Francis White
12. Alan P. Smith
13. Lewis N. Hopkins
14. John W. Garrett
15. J. Carey Thomas
16. George William Brown
17. Galloway Cheston
18. Joseph P. Elliott

The First Hospital Trustees



1. Richard M. Janney
2. George W. Dobbin
3. Alan P. Smith
4. George William Brown
5. Charles Morton Stewart
6. John W. Garrett
7. Charles J. M. Gwinn
8. Joseph Merrefield
9. Galloway Cheston
10. Lewis N. Hopkins
11. Thomas M. Smith
12. William T. Dixon
13. John Fonerden
14. Francis White
15. William Hopkins
16. Francis T. King
17. Joseph P. Elliott
18. George W. Corner
19. James Carey

WHEN the two paintings reproduced on the opposite page were installed in the board room of the Johns Hopkins University's Shriver Hall not long ago, the University was able to write *finis* on its fulfillment of the terms of the will of the late Alfred Jenkins Shriver, "one of the most remarkable documents of our time," according to his fellow lawyers. Mr. Shriver, who was graduated from Johns Hopkins in the Class of 1891, left the University funds for building an auditorium bearing his name, provided the University would carry out his wishes to the last detail. Among the details: inclusion in the building of sculptures of Daniel Coit Gilman, William Henry Welch, and Isaiah Bowman, and murals depicting Mr. Shriver's Johns Hopkins classmates, ten famous Baltimore beauties selected by Mr. Shriver, ten philanthropists of Baltimore, the original faculty of medicine, the original faculty of philosophy, Baltimore clipper ships, the original Johns Hopkins University board of trustees, and the original Johns Hopkins Hospital board of trustees.

The artists who were commissioned to paint the murals were faced with formidable tasks. Altogether, the murals contain exactly one hundred life-size figures, plus smaller likenesses of the members of the Class of '91. Assembling photographs and paintings from which the artists could work was a gigantic job in itself. James Owen Mahoney, who painted the clipper ships, was the first to finish; then came Leon Kroll with the faculties, the class picture, and the ten famous beauties. This year the paintings of the two boards of trustees, containing thirty-seven figures but showing only twenty-four different men (thirteen served on both boards), were installed in Shriver Hall by artist Deane Keller.

PHOTOGRAPHS BY ALAN J. BEARDEN

A Johns Hopkins Gazette

CONTINUED FROM PAGE 23

ing and curricula. Dr. Dehuff retired in September as principal of Baltimore Polytechnic Institute.

WILLIAM L. DOYLE, M.A. '32, PH.D. '34 (zoology), Bruce Fellowship '34–'35 (zoology), has been named associate dean of the Division of Biological Sciences in charge of non-clinical affairs of the University of Chicago.

HUGH L. DRYDEN, B.A. '16, M.A. '18, PH.D. '19 (physics), LL.D. '53 (hon.), director of the National Advisory Committee for Aeronautics, has been appointed deputy chief of the new National Aeronautics and Space Administration.

HARRY EAGLE, B.A. '23, M.D. '27, fac. '29–'32, '36–'47 (medicine), '40–'47 (hygiene), house staff '27–'28 (pediatrics), has been elected president of the Society of American Bacteriologists.

PAGE EDMUNDS II, B.A. '38, has been named assistant general manager of chemicals in the W. R. Grace & Company's Davison Chemical Division. He has also been appointed vice-president of Davison Chemical Company, Ltd., the Canadian affiliate of the division.

GERALD L. ESTERSON, B.E. '51, DR.ENG. '56 (chemical), has been appointed assistant professor of chemical engineering at Washington University.

RUTH ELDRED FAIRBANK, M.D. '16, fac. '17–'38 (medicine), house staff '16–'35 (psychiatry), has retired from the staff of Mount Holyoke College.

ALBERT L. FAIRLEY, JR., G. '34–'35 (geology), has been made executive vice-president and director of the Dominion Steel and Coal Corporation in Canada. He is also the director of the Dominion Coal Company, Ltd., and the Nova Scotia Steel and Coal Company, Ltd.

JOSEPH A. FITZMYER, PH.D. '56 (Oriental seminary), has been appointed professor of New Testament at Woodstock College, Woodstock, Maryland.

DONALD H. FLEMING, B.A. '43, formerly chairman of the department of history at Brown University, has been appointed to the new professorship of the history of science at Yale University.

HARRY F. FRANK, B.A. '17, G. '25–'26 (education), has retired after more than thirty years as vice-principal of Baltimore Polytechnic Institute. He has joined the staff of the University of Baltimore as director of admissions and dean of students.

CHESTER N. FRAZIER, DR.P.H. '47, head of the department of dermatology at the Harvard Medical School, has retired with the title of Edward Wigglesworth professor of dermatology emeritus.

ABRAHAM L. GELPERIN, M.P.H. '42, DR.P.H. '48, has been named director of health and hospitals for the health division of Kansas City.

MARY ELIZABETH GIFFIN, M.D. '43, has been appointed medical director of the North Shore Mental Health Clinic, Highland Park, Illinois.

CARL FRANK GRAESSER, M.A. '58 (Oriental Seminary), has been appointed assistant professor at Concordia Senior College, Fort Wayne, Indiana.

KENT R. GREENFIELD, PH.D. '15 (history), fac. '30–'46 (modern European history), has retired as chief historian for the Department of the Army. Dr. Greenfield plans to move back to Baltimore, where he will write his own two-volume history of World War II.

WILLIAM LEE HANSEN, PH.D. '58 (political economy), has been named assistant professor of economy at the University of California.

A. PAGE HARRIS, M.D. '46, fac. '49–'54, house staff '46–'47, '50–'54 (urology), has been promoted to associate professor at Vanderbilt University.

ARTHUR W. HEDRICH, SC.D. '28 (hygiene), fac. '26–'53 (hygiene), has retired as chief of the division of vital records and statistics of the Maryland State Department of Health.

JOHN MICKLE HEMPHILL II, B.A. '48, has been appointed assistant professor of history at Southwestern College at Memphis.

J. WILLIAM HILLMAN, M.D. '45, fac. '49–'52, house staff '45–'46 (surgery), '48–'51 (orthopedics), has been promoted to professor of orthopedic surgery at Vanderbilt University.

CHARLES A. PORTER HOPKINS, B.A. '53, M.A. '54 (writing, speech, and drama), has been named assistant editor of the *Maryland Historical Magazine*.

MORTON W. HUBER, B.A. '47, M.A. '48 (chemistry), G. '49–'51 (chemistry), has been appointed to the faculty of the Maryland Institute's school of art.

ALBERT D. HUTZLER, JR., B.A. '37, president and general manager of Hutzler Brothers Company, Baltimore department store, has been elected to the board of directors of the Central Savings Bank of Baltimore.

B. VAL JAGER, fac. '42–'43, fellow '43, house staff '42–'43 (medicine), has resigned as associate professor of medicine at the University of Utah College of Medicine to become chief of the medical service of the Veterans Administration Hospital in Syracuse, New York.

JOHN A. KIRCHNER, arts '33–'34, fac. '46–'49 (medicine), house staff '46–'49 (otology), has been awarded the Harris P. Mosher Award of the American Laryngological, Rhinological, and Otological Society for his report that a throat muscle, the cricopharyngeus, has a definite connection to the nervous system and is, therefore, affected by many neurological diseases.

LESTER P. KUHN, PH.D. '48 (chemistry), has been awarded a Secretary of he Army research-study fellowship to conduct chemical research for a year at the University of Zurich.

WILLIAM F. LAUKAITIS, G. '28–'30 (political economy), has been appointed postmaster of Baltimore. He had been acting postmaster for eighteen months.

DOROTHEA C. LEIGHTON, M.D. '36, fac. '37–'42, house staff '37–'39 (psychiatry), has been appointed associate professor of psychiatry at Cornell University Medical College.

ROBERT BRUCE LLOYD, M.A. '49, PH.D. '52 (classics), has been appointed chairman of the department of Latin at Randolph-Macon Woman's College.

ROBERT F. LOEB, fac. '20–'21, house staff '20–'21 (medicine), has been reappointed to the National Science Board of the National Science Foundation.

EDITH LUCILE MARINE, G. '24–'26 (education), has been appointed professor of education at the University of Toledo.

GEOFFREY M. MARTIN, fac. '46–'47, house staff '46–'47 (pediatrics), has been named executive secretary of the Kansas State Board of Health.

WILLIAM F. MEGGERS, PH.D. '17 (physics), has retired as chief of the spectroscopy section of the National

GIFTS OF ENDURING CHARM

IVORIES—
BIBELOTS—
JADE—
FLOWER CONTAINERS—LAMPS
CHINESE ART—SCREENS

THE MARCO POLO SHOP
14 W. FRANKLIN ST. - MU 5-2726
Free Parking Directly Opposite

Bureau of Standards after forty-four years of service.

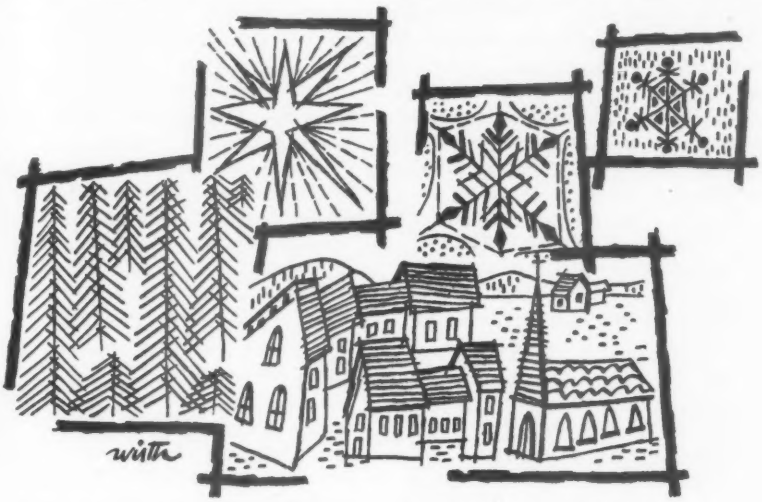
H. Houston Merritt, M.D. '26, has been named acting dean of the Faculty of Medicine and the College of Physicians and Surgeons at Columbia University.

Hugh J. Morgan, M.D. '18, fac. '20–'21, house staff '19–'21 (medicine), has been named professor emeritus of medicine at Vanderbilt University.

1958 Outstanding Management Award of the Baltimore chapter of the Society for Advancement of Management.

Carroll S. Rankin, B.S. '33, has been appointed principal of the newly built Edmondson High School in Baltimore.

Addison H. Reese, arts '26–'29, has been named to the committee of sponsors of the Foundation for Commercial Banks. Mr. Reese is president of the American Commercial Bank.



John Bryarly Munnikhuysen, B.E. '50 (mechanical), has been promoted to director of research and development at Waverly Press, Inc., Baltimore.

Francis D. Murnaghan, JR., B.A. '41, has been named a member of the board of trustees of the Peabody Institute in Baltimore.

Marcus A. Naylor, JR., M.A. '43, PH.D. '45 (chemistry), has been named assistant director of general products research for Du Pont's Polychemicals Department.

Bartow Van Ness, JR., B.E. '21, has been promoted to chief electrical engineer of the Pennsylvania Power and Light Company at Allentown, Pa.

John Coleman Nunemaker, fac. '39–'41 (medicine), has been elected associate secretary of the Council on Medical Education and Hospitals, American Medical Association.

Frederic D. Ogden, PH.D. '51, has been promoted to associate professor of political science at the University of Alabama. Dr. Ogden recently returned from New Delhi, India, where he was visiting professor at the Indian School of International Studies.

G. Harry Pouder, B.S. '26, executive vice-president of the Baltimore Association of Commerce, has been named as one of the recipients of the

Mas Sardjito, hygiene '23–'24, was recently appointed president of Gadjah Mada University, Jogjakarta, Indonesia.

Kurt E. Schuler, senior staff '51–'55 (APL), has rejoined the staff of the National Bureau of Standards as supervisory physical chemist in the heat division.

L. Vernon Scott, SC.D. '50 (hygiene), has been promoted to professor of microbiology at the University of Oklahoma School of Medicine.

Louise C. Seibert, G. '22–'26 (political economy), PH.D. '29 (education), G. '33–'35 (Romance languages), has retired as professor of Romance languages at Goucher College.

Maurice J. Shore, PH.D. '40 (education), has been appointed visiting professor in the graduate school of education at Yeshiva University.

Gerald Alfred Smith, PH.D. '57 (English), has been appointed associate professor of English at Geneseo State Teachers College, Geneseo, New York.

Martha L. Smith, M.P.H. '49, fac. '43 (medicine), has been appointed assistant professor of pediatrics at Cornell University Medical College.

Philip E. Smith, SC.D. '49 (hygiene), has been promoted to professor of preventive medicine and public health at the University of Oklahoma School of Medicine. He has also been appointed associate dean of the Graduate College, Medical Center.

Ruth I. Steinberg, graduate dietician '38, has been appointed associate professor of nutrition at the University of Kansas Medical Center.

Harold W. Stoke, PH.D. '30 (political science), has been named president of Queens College, Flushing, New York.

Paul Windom Sutton, JR., PH.D. '55 (philosophy), has been appointed assistant professor of philosophy at Skidmore College.

Milton Terris, M.P.H. '44, has been appointed professor of epidemiology at the Tulane University School of Medicine.

Clarence Thomas, M.D. '29, fac. '29–'31 (medicine), has been promoted to professor of clinical medicine at Vanderbilt University.

James Claude Thomson, M.P.H. '44 has accepted an appointment as professor of nutrition in the Medical College of Yonsei University in Seoul, Korea.

John Grason Turnbull, arts '25–'26, business economy '26–'27, has been made a member of the American College of Trial Lawyers.

Harold C. Urey, fac. '24–'28 (chemistry), professor-at-large of chemistry at the University of California, has been named to the Space Science Board of the National Academy of Sciences. He will head the commission on the geochemistry of space and the exploration of the moon and planets.

James W. Ward, fellow '36–'37 (anatomy), has been promoted to professor of anatomy at Vanderbilt University.

William Hoffman Ward, JR., engineering '29–'32, B.S. '42, has become a partner in Walcutt, Ward & Associates, a consulting engineering firm in Austin, Texas.

Albert Weinstein, fellow '30–'32, fac. '32–'33, house staff '32–'33 (medicine), has been promoted to professor of clinical medicine at Vanderbilt University.

Donald D. Weir, fac. '55–'57, fellow '57–'58, staff '57–'58, house staff '54–'55, '56–'57 (medicine), has been appointed assistant professor of medicine at the University of North Carolina.

Joseph E. Willhide, JR., B.S. (McCoy) '52 (industrial engineering), engineering '46–'48, has been appointed head of the engineering department of Eastern Products Company.

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A Johns Hopkins Gazette

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MAXWELL M. WINTROBE, fac. '30–'43 (medicine), has received the Adolfo Ferrata Award for outstanding contributions in hematology from the Seventh International Congress of Hematology. Dr. Wintrobe also received the Gold Headed Cane Award from the University of California this year and was awarded the honorary degree of Doctor of Science from the University of Manitoba. He is head of the department of internal medicine at the University of Utah College of Medicine.

JOHN B. YOUMANS, M.D. '19, fac. '21–'22 (medicine), has resigned as dean of the Medical School of Vanderbilt University to become head of medical research for the U. S. Army. Vanderbilt has conferred upon him the title of professor emeritus.

DEATHS

GRANVILLE QUINN ADAMS, M.D. '33; on July 29, 1958. He was a surgeon in Houston, Texas.

CARL R. AHROON, JR., B.A. '28; on August 25, 1958. He had been a physician in Bloomington, Illinois, since 1935.

ROSA BALDWIN, G. '10–'12 (Latin), McCoy '13–'14, '15–'26; on March 15, 1958. She taught Latin at Eastern High School in Baltimore for fifty years.

LAWRENCE JOHN INGRAM BARRETT, fac. '36–'37, '38–'42 (military science and tactics); on June 26, 1957. He was a retired Army colonel.

MARY NESBITT BAUER, B.S. '40; on April 3, 1957. She was a retired teacher in the Baltimore public schools.

FREDERICK BAUERNSCHMIDT, B.A. '28; on July 3, 1958. He was a lawyer and special agent for the Hartford Accident and Indemnity Company.

THOMAS NICHOLS BIDDISON, B.A. '28; on August 7, 1958. He had been head of the legal department of Baltimore City.

KATRINE BLACKINTON, graduate nurse '05; on July 28, 1958. She had been living in North Adams, Massachusetts.

HORACE DESCHAMPS BLOOMBERGH, M.D. '01; on May 1, 1958. He had retired from private practice and was living in Rockport, Massachusetts.

ANTHONY J. BOCKIAGE, engineering '55–'58; on June 6, 1958. He was a resident of Baltimore.

E. GILLET BOYCE, arts '31–'32; on June 6, 1958. He headed the insurance firm of Boyce and Company in Baltimore.

WILLIAM HAND BROWNE, JR., B.A. '90, B.E. '92; on March 19, 1958. He was professor of electrical engineering and head of the department at North Carolina College of Agriculture and Engineering in Raleigh, North Carolina.

MIRON BURGIN, fac. '51–'57 (SAIS); on March 13, 1957. Dr. Burgin, one of the nation's leading authorities on modern Latin America, served in the State Department as chief of the Division of Research for American Republics since 1949.

JOHN GERING CASHELL, B.A., '48; on June 24, 1957. He had been employed since April, 1953, as a fellow at the Mellon Institute for Industrial Research.

VICTOR JOHN CHAMBERS, PH.D. '01 (chemistry); on October 23, 1956.

BURTON WILLIAM CLARK, PH.D. '12 (geology); on June 9, 1958. He was assistant professor of economy at Sampson College before his retirement in 1948.

CHRISTOPHER T. CLARK, B.A. '00; on May 18, 1958. He had been living in Chicago, Illinois.

RENA CRAWFORD, M.D. '15; on December 15, 1957. She was on the faculty of the Louisiana State University School of Medicine in New Orleans, and on the staff of the Southern Baptist Hospital as a pediatrician.

MARY BARTLETT DIXON (MRS. THOMAS S.) CULLEN, graduate nurse '03; on September 5, 1957. She was an active member of the suffrage movement in Maryland and founded the League of Women Voters in Talbot County.

JACK DEAVOURS, B.A. '23; on May 13, 1958. He was a lawyer in Laurel, Mississippi.

GRACE GILLESPIE (MRS. OSKAR A.) DIETHELM, graduate nurse '05; on May 13, 1958. She was living in Bronxville, New York.

DANIEL O'CONNELL DOUGHERTY, medicine '02–'03; on May 30, 1958.

He was a retired real estate agent in Atlanta, Georgia.

EMMA JENNETTE LEVY (MRS. LUDWIG) EDELSTEIN, G. '37–'38 (archaeology); on July 5, 1958. In 1945, in collaboration with her husband, Dr. Ludwig Edelstein, professor of humanistic studies at Johns Hopkins University, she completed the two-volume *Asclepius—A Collection and Interpretation of the Testimonies.*

FLORENCE GOODMAN (MRS. E.) ENZMANN), graduate nurse '15; on June 4, 1958. She was living in Des Moines, Iowa.

MERTON S. FALES, JR., B.A. '38; on August 4, 1958. He was living in Baltimore.

THOMAS LUDLOW FERENBAUGH, M.D. '09; on December 12, 1957. He was a physician in internal medicine.

FREDERICK B. FLINN, B.A. '00; on April 8, 1957. He was a retired physiologist and industrial toxicologist. He was noted for his experiments on poisoning.

WALTER GUSTAVE FRANKENBURG, research associate '40–'42 (chemical engineering); on July 4, 1957. His research in the chemistry of tobacco led to the development of new tobacco products and improved methods of curing and processing cigar tobaccos.

WILLIAM JOSEPH FRENCH, fac. '39–'53 (public health administration); on August 3, 1958. Before his retirement in 1952, he served as Anne Arundel County (Maryland) health officer for sixteen years.

NEELY FRIERSON, graduate nurse '08; on January 12, 1958. She had been living in Anderson, South Carolina.

MORRIS FRISHMAN, M.D. '17; on April 26, 1958. He was living in Pittsburgh.

ALBERT D. GRAHAM, trustee '32–'51; on May 17, 1957. He was chairman of the board of the First National Bank and president of the Board of Finance Commissioners of Baltimore City.

EVARTS A. GRAHAM, LL.D. '52 (hon.); on March 5, 1957. Dr. Graham retired in 1951 after thirty-two years as chief surgeon of the hospital and also as head of the department of surgery at the Washington University School of Medicine. He gained widespread fame in the 1920's for his use of X-ray photographs in the study of gall bladder diseases. In 1933 he became the first surgeon to remove an entire human lung successfully.

ISABEL FALCON GRANT, graduate nurse '05; on May 7, 1958. She was a nurse in Veterans Administration hospitals.

The Energy Mystery

Continued from page 14

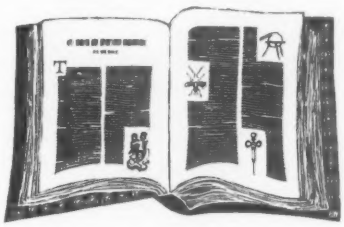
groups. If the bonds of the energy-rich phosphate groups break, seven thousand calories of energy are liberated. If ATP were simply broken down by splitting the bond with water, this energy would come off as useless heat. The remarkable and perplexing thing is that ATP is able, through enzyme action, to transfer its phosphate groups, with their energy, to other substances in living cells. Once ATP yields its energy, it returns to ADP and inorganic phosphate and must be rebuilt by repeating the energizing process, just as the boulder must be carried to the top of the hill to regain potential energy and more water must be added to the mountain lake.

Because they play such an important part in energy transformation, perhaps a word should be said of enzymes. The enzyme is simply a catalyst. It is a protein substance in cells which speeds up chemical reactions thousands of times without being changed itself. It is the enzyme which enables the human body to produce three million red blood cells every second. It converts grape juice to wine, digests food, changes leaves to red and yellow in autumn, and is essential for the formation of all body chemicals. A peculiar and remarkable characteristic of the enzyme is its specificity. An enzyme is created by the gene for one particular purpose. A single cell has been estimated to contain about one hundred thousand enzyme molecules to speed up its hundreds of chemical reactions. As the "biochemical middleman" the enzyme plays a vital role in all of the life processes.

MOST BEWILDERING to the biochemist in his study of ATP is the way in which it transfers its energy to body cells to perform their functions. It has now been established that ATP is needed for all life processes, from the blinking of the eyelid to the wriggling of the male sperm as it seeks out an egg. ATP is abundant in muscle tissue, where it is constantly needed for movement, and where it somehow reacts to stimulation from nerve cells to make the muscle contract. It is even responsible for maintaining the electrical currents necessary in the transmission of nerve impulses which order its reaction with the muscle cells.

The dependency of life upon ATP is perhaps most dramatically illustrated by the fact that ATP supplies the energy for the contractions of the heart muscle —the cessation of which has come to be the symbol and definition of death.

In their efforts to solve its mysteries, the biochemists have succeeded in isolating ATP. They have found that it is a white substance and is essential in the making of protein and nucleic acid. Once again the scientist is on the threshold of life itself, for wherever there is life, its carrier is a nucleo-protein. And in its elementary structure, ATP closely resembles the nucleic acid of the cell, the basic chemical of the genes. Biochemists have not only succeeded in isolating ATP; they have made it in the laboratory. They have applied it to a strip of rabbit muscle and watched in awe as the muscle contracted (mechanical energy).



Why the muscle contracts when it comes in contact with ATP is not known. Also unknown is the change that occurs when a nerve commands a muscle to contract (electrical energy). When ATP is added to the lanterns of fireflies, light is emitted (light energy), thus completing the energy cycle of light to light. In every case, the use of ATP to perform work is a mystery to the biochemist. He suspects that ATP is somehow transformed into the muscle tissue, for instance, by a mechanism that is still obscure and which takes place within a few milliseconds. No other substance will serve. Only ATP can make the muscle contract. Rigor mortis, the stiffening of the body following death, is now known to be due to the loss of ATP, which had kept the muscle elastic. The restoration of elasticity to the rigid muscle has been effected by the addition of ATP to it.

THE PRIMARY QUESTIONS regarding the acquisition and transformation of energy which the biochemist is seeking to answer are: (1) How does the chlorophyll capture light energy and convert it into glucose and ATP? and (2) How is energy used to do useful work?

It is not merely to satisfy a yen for knowledge that the scientist seeks to answer these questions; the answers may open whole new realms of science, as well as unlock some of the secrets which frustrate progress in such fields as medicine, agriculture, and industry. Man already knows what chlorophyll is and, with some difficulty, can make it in the laboratory. It is interesting to note that it closely resembles *heme* in the blood, except that chlorophyll contains magnesium instead of iron. And chlorophyll's method of synthesis is much the same as the formation of blood cells in animals. If man discovers how this green substance is able to convert light energy into chemical energy, he may be able to by-pass the green plant and make food directly from sunlight, carbonates, and water. Also, he might be able to decompose water into an explosive mixture of hydrogen and water, which could be used as a source of heat or power. With the key to photosynthesis in his possession, it is unlikely that man would ever again worry about exhausting his supply of food and fuel.

When the biochemist finds the answer to the second question—how ATP transfers its energy—he may make possible the greatest medical advances in history. Take heart disease, for example. It is the greatest pathologic killer of man, causing more than half of all deaths, yet in most cases the diseased muscle cannot be repaired because its structure and function are not completely understood. Because muscular dystrophy is confined to the muscle tissue, it provides an area of exploration for the biochemist. Perhaps he will find that this disease is related in some way to the functioning or non-functioning of ATP in relation to vitamins, especially Vitamin E.

Such malfunctioning of ATP may be directly or indirectly responsible for many human diseases. Since this chemical is used in cell division or growth and in making enzymes which control this process, it may bear significantly on the cause of cancer, which is abnormal cell growth. Biochemists believe also that mental diseases in man may be caused by malfunctioning of ATP. The depressing effects of narcotics and anesthesia may result from interference with the function of ATP. As was shown earlier, vitamins and their derivatives play a part in liberating energy during respiration in man. It is obvious at once, then, that a vitamin deficiency would reduce man's efficiency in an energy-liberating reaction involving glucose. This in turn would affect the production of

ATP and would cause a shortage in cells which need ATP to perform their functions. Since all human diseases are ultimately cellular diseases, the role of ATP in pathology is, in all probability, a tremendous one.

How close is the biochemist to answering the baffling questions of photosynthesis and energy transformation? Some have raised the plea for Kant's "Newton of the green leaf." It is more likely, however, that forthcoming answers will be the result of many minds and many research projects. Much progress has already been made in our understanding of ATP function, of photosynthesis, of muscle contraction, of firefly luminescence, and of other energy-transformation processes. Within the next few years, biochemists should develop some fruitful theories on how excited chlorophyll is working and on how ATP is made and used in a number of important processes. But the discovery of how chemical energy is used for the function of an organism, particularly a complex organism which walks, talks, and thinks, may take a long time.

The Medieval University

Continued from page 5

a question of this kind is a very deep one and one that requires a long investigation."

Hastings Rashdall in his monumental work on medieval universities believes this passage has played a greater part in the history of human thought than any other passage of equal length in all literature. Schachner agrees and is willing to compare its influence with any passage of *any* length.

What was the paragraph's effect? For one thing, during the Inquisition many harmless scholars who ventured the "wrong" answers to Porphyry's question were tortured. Also, the disagreement it caused resulted in bloodshed, riots, and mayhem in university towns throughout Europe. But, most important, it directly caused the rise of interest in logic and dialectic which gave impetus to the establishment of the university. It is known today as the *doctrine of universals*.

When Porphyry asked whether ideas (universals) have a real existence in themselves, or whether they are simply abstract words which humans make up for convenience of speech, he posed a question which shook the intellectual world. Immediately, two schools arose to debate the question—the realists and the nominalists. The nominalists would have maintained, for example, that Benvenuto, the merchant, was unlike anyone else in the world. They would have said, Benvenuto is bald, with a paunch, and a slight limp. He is frugal, drives a hard bargain, and is apt to cheat a little. Benvenuto is real, the nominalists would have insisted.

The realists, on the other hand, would have derided such reasoning. Benvenuto is real, they would have claimed, only inasmuch as he has the same characteristics as other men. His differences from any other man are accidents. He is

simply a member of a class, a species. As an individual, Benvenuto does not exist; it is the universal idea of man that is reality.

Because of its theological implications in a period when theology was very much a part of everyone's life, the debate raged throughout the Middle Ages. It gained significance when the Church entered the fray. The nominalists applied their thinking to holy doctrine by challenging the Church's dogma of transubstantiation and declaring flatly that the bread and wine of communion were certainly not the body and blood of Christ, but only symbols. The realists met this argument agressively with their own brand of logic and stalemated the disputation. Then the nominalists attacked the concept of the Trinity, claiming that if Father, Son, and Holy Ghost were one, Heaven was vacant while Christ was on the cross. And this, argued the nominalists, was wholly unacceptable. Rather, they insisted, each of the Trinity is a separate God with His own particular substance. This argument so infuriated and befuddled the realists that they muttered dire threats and turned to more violent expression of their disagreement.

To the support of the realists came the Church. The most prominent and vocal nominalists were given the choice of recanting or burning. And, at one time, the Church considered forbidding the application of philosophical reasoning to any tenets of faith.

During this intellectual turmoil, vague and obscure beginnings of the university were underway. Learning was being imparted by various men who declared themselves masters and proceeded to seek listeners for their lectures and disputations. Students from all over the world traveled to study under one or another of these teachers, depending upon who was most skillful in the use of logic. Poor men, possessed with a thirst for learning, trod dusty highways, braving bandits and pestilence to hear the lectures of an Abelard or a Roscelin. Wealthy noblemen rode on horseback, attended by an armed servant, to the same teachers. Thousands of eager scholars left their homelands and trudged abroad to sit at the feet of the master who best employed the new and exciting syllogism. Learning was a mobile and flexible thing which was here, there, and everywhere, depending upon the whims of the teacher.

Teachers, however, began to settle in particular cities, if they were made properly welcome, and learning began to be associated with such names as Bologna, Salerno, Montpellier, Oxford, Paris, Heidelberg, and Upsala. Thus came the university, bringing with it a certain stability and ending much of the chaos that had previously characterized medieval education.

The nature of the medieval university was unlike that of today's university. This is indicated by the meaning of the word itself, which did not appear until the beginning of the thirteenth century. The word *university* means,

etymologically, "the whole," and was applied to every trade guild, municipality, lodge, or common enterprise in medieval culture. This was not inappropriate, for the first universities were essentially trade unions—guilds for mutual protection and comfort. In Bologna, students banded together for safety's sake and to increase their bargaining power with the townspeople, who were determined to make as much money as possible in their dealings with students. In Paris, masters formed a union for similar reasons, as well as for a measure of collective strength against the fee-paying students with their overbearing demands.

The evolution of the university took two distinct paths—one in northern Europe, centered in Paris, and the other in southern Europe, centered in Bologna.

The universities at Paris and Bologna in many ways were quite different from each other, and, together, illustrate the growth of the medieval university. In northern Europe—northern France, Germany, and England—education was solely on an ecclesiastical basis. The schools were closely connected with the Church and the masters and pupils alike were almost always clerical men aspiring to holy orders. Consequently, learning in the north consisted primarily of theology and philosophy, with considerable religious fervor stirred in.

In southern Europe—Italy, southern France, and Spain—the approach to education was much more pragmatic, with emphasis on the secular subjects of civil law, medicine, and letters. There were church schools, but they were minor. The universities which arose in southern Europe were run by laymen for laymen, with the prevailing attitude being that education was something to be kept separate from the Church.

The masters controlled the university of the north. The student paid his fees to attend lectures. He spent two years in the basic course of arts; he then became a bachelor and could become an instructor and/or enter the higher faculties of medicine, law, philosophy, or theology, with the goal of becoming a licensed master in five or six years. The licensed masters formed their union for mutual protection and as a measure of defense against the townspeople and the chancellor.

The chancellor was the representative of the Church and possessed the right to grant or withhold teaching licenses. He

soon discovered that this right could be used to make him wealthy, and he made the most of it by selling licenses. The early history of the University of Paris is marked by the constant struggle between the masters and the chancellors.

In the south, at Bologna, it was the student who controlled the university. These students were mature men, uninterested in the nonsense of the fourteen- or fifteen-year-old students of Paris. There was little of the riotous drinking and carousing that characterized the adolescent student of the north. The southern students hired their professor and required a bond from him. Early statutes relate how professors might not be absent without leave, even for a single day. If a professor wished to leave town, he deposited a sum of money with the university of students to insure his return. A learned doctor was required to begin his lectures at the sounding of the great bell and to terminate within one minute after the next bell sounded. Long-winded masters were fined. Students stipulated that the professor must proceed to the substance of the subject and not spend the entire year on the introduction and bibliography.

Although the southern students were not burdened with a chancellor, they did have the townspeople to cope with. They, like the doctors of Paris, found it to their advantage to face the townspeople with a united front. Students and professors alike, in the north as well as the south, found that the union had other advantages. One of the most important was that it provided a feeling of security to those who were strangers in the land, men far from their homes. By joining together, they assured themselves of protection which their distant homelands could not grant, and they were secure in the knowledge that if they died they would, at least, receive a decent burial.

Out of the unions of Paris and Bologna grew the *studium*, which is the institution which we now know as the university. Paris, Bologna, Salerno, and Oxford were *studia generalia*—places where students were welcomed regardless of their nationality. (Salerno offered refuge to Jews when they were being persecuted throughout Europe.) Eventually, universities and *studia generalia*, to be recognized, had to possess at least one of the higher faculties of medicine, canon or civil law, philosophy, or theology, as well as a basic arts faculty. If this prerequisite was not met, the school simply remained a *studium*, or local school.

The nature of the *studium generale* added to the importance of the masters' guilds. If a master decided to leave Paris and journey to Bologna, he could do so with the assurance that he would be admitted there as a qualified teacher. This special privilege was known as *jus ubique docendi*, the right to teach anywhere.

By the middle of the eleventh century, the university had achieved great fame and popularity, more or less on its own. Kings and popes had watched this growth with extreme interest, and, after some misgivings, began searching for ways to capitalize on the new phenomenon. In 1158, Frederick Barbarossa, king of Sicily and Naples and Emperor of the Germans, set a precedent by encouraging students to gather in his domain.

Frederick acted first with his general charter of privileges for any student. It read: "It is our desire that students and, above all, the professors of divine and sacred laws may be able to establish themselves in cities where the study of letters is practiced. It is fitting that we should shelter them from all harm."

The charter went on to lay down rules protecting the students from assault or injury within the reign.

Frederick's decree worked a marvelous change. Students and masters became a privileged class who could sneer at civil courts and walk sacred corridors of royal favor and protection. Not to be outdone, the popes began blessing the university. Their action was something of self-defense, for they recognized the university as a potential threat and fountainhead of sedition. Unable to prevent its growth, the popes began to assume control over the university by becoming its benefactor. It was not long before the popes were setting standards as to what should and should not be taught.

The Papacy furthered its control by granting charters to universities. These bulls, issued by popes, granted certain privileges and amounted to an official recognition of the university outside of its own locale. The power to grant implies the power to take away, and papal authority over universities increased. Eventually it was assumed,

without legal basis, that papal recognition was a prerequisite for any school wishing to become a *studium generale* with the right to teach anywhere for its masters. And even the already great universities of Paris and Bologna sought extra security in the papal bull.

Frederick II, grandson of Barbarossa, had followed in the footsteps of his shrewd grandfather in encouraging students to settle in his lands. He went further and founded the University of Naples by special decree in 1224. By conferring the charter on Naples, Frederick attempted to give it a monopoly of teaching in his domains, thereby drawing students away from Bologna, which had joined the hostile Lombard League.

The popes founded their own universities. Toulouse was established in southern France as a bulwark against a heretical movement. Nantes and Bourges were founded by the pope in the fifteenth century to keep local students from attending the University of Paris when that institution lost favor by straying from papal prescription.

One perhaps wonders why popes and kings even tolerated the university, let alone blessed it. The medieval university was the result of the intellectual fervor that followed the Dark Ages. As this passion for learning increased, so did the power of the university. The medieval university had no buildings, laboratories, or endowments. It had no board of trustees, no dramatics, no athletics, and no extracurricular activities—except those of drinking, fighting, and fencing. Thus, although the university was more stable than the wandering cathedral school of Abelard, it was a mobile institution that was not bound by physical ties to any locale.

When a university chose a spot in which to operate, it immediately brought business and wealth to that town. In addition, learned doctors emanated prestige and intangible influence on civilized Europe. It soon became obvious to teachers and students that the town needed them more than they needed the town. If a king or a pope, or even a bishop or chief of police, insulted or in some way offended them, the teachers and students, through their union (university), brought to bear their most powerful weapon—the cessation.

The cessation was a unique instrument of power, very much like the labor strike of today. When a cessation was called, masters and students simply packed their knapsacks and vacated a city. Overnight, a thriving metropolis like Paris or Bologna could (and often did) become a ghost town. The university had no fears of being unwelcome in another town. At the first sign of a cessation, the university received invitations not only from neighboring towns, but from other kingdoms—as when Henry III attempted unsuccessfully to lure the disgruntled University of Paris to England. Thus it was that popes and kings found it futile to oppose the university and instead made concessions with the hope of eventually gaining control over it.

In addition to increasing the power of the university, the cessation contributed to its growth numerically. The universities of Vicenza, Arezzo, and Padua, in Italy, were established when students and masters migrated from Bologna. Cessations at the University of Paris contributed substantially to the growth of universities at Toulouse, Angers, and Orleans. A growing spirit of nationalism also played a part in the rise of the university. As pride in the nation grew at the expense of Church and empire, universities were founded to keep scholars at home. The new universities began feeding the fires of nationalism.

By the end of the Middle Ages, there were more than eighty universities in existence, ranging from the great institutions at Bologna, Paris, Oxford, and Padua to some of the lesser ones that would soon disappear. The professor had risen to a position of high esteem. He found himself being courted by students, kings, and popes. Especially in Italy was the professorial body raised to an almost unrivaled reputation in Europe. The status of professors was lifted to a dignity which it has never reached in most other countries; it was not uncommon for professors to be the proudest nobility of the land.

As the Reformation approached, the university faced the first genuine blow to its stature. It had, in many instances, fed on its own power to become rich and corrupt. Too often the business of teaching was left to assistants, while masters dabbled in politics and the business of making money. As the university acquired real estate, the cessation became impractical, and the Church and the state imposed their will with little fear of retaliation. Thus ended the university's golden era. In years to come it would soar to new heights, but never to the enduring pinnacle of influence which it occupied during the Middle Ages.

The development of the university spans the centuries up to the present. Its history is marked by milestones in every era—whether they be the illustrious faculties of Leiden, the famed "Göttingen Seven," the beginning of true academic freedom in Berlin, or the beginning of the first American graduate university in Baltimore. And although the university has changed with the centuries, and its contribution to the knowledge and progress of man has been greater since the Middle Ages, it is to that period that we must pay tribute for the existence of the university.

—R. W.

Events at Johns Hopkins

FROM NOVEMBER 26 THROUGH DECEMBER 31

HOLIDAYS

THANKSGIVING—The HOMEWOOD SCHOOLS, including MCCOY COLLEGE, will recess for the holiday from Thursday, November 27 through Sunday, November 30. The SCHOOL OF MEDICINE, SCHOOL OF HYGIENE AND PUBLIC HEALTH, and SCHOOL OF ADVANCED INTERNATIONAL STUDIES will suspend classes on Thursday, Nov. 27.

CHRISTMAS—December 25 falls on Thursday this year. The HOMEWOOD SCHOOLS, including MCCOY COLLEGE, will suspend classes from Monday, Dec. 22 until Monday, Jan. 5. The SCHOOL OF MEDICINE will suspend classes from December 23 at 5 p.m. until Friday, January 2 at 9 a.m. The SCHOOL OF HYGIENE AND PUBLIC HEALTH will suspend classes from Saturday, Dec. 20 at 1 p.m. until Friday, Jan. 2 at 9 a.m.

MUSIC

CHRISTMAS CONCERT—The Johns Hopkins Glee Club and Orchestra will be joined by the Goucher College Glee Club in a concert of sacred music appropriate to the Christmas season; open to the public without charge (Sunday, Dec. 7 at 8:30 p.m. in Shriver Hall).

CHRISTMAS STEP-SING—The Glee Club, in one of the pleasantest of Johns Hopkins traditions, will sing carols under the stars. The University's Christmas tree and the tower of Gilman Hall will be specially lighted for the occasion. Admission free. (Wednesday, Dec. 17 on the steps of Gilman Hall at 8 p.m.)

CHRISTMAS ASSEMBLY—Season's greetings from the Glee Club, the Orchestra, and others in a program that is always among the year's most popular; open to the public without charge (Friday, Dec. 19, at 10 a.m. in Shriver Hall).

ALUMNI ACTIVITIES

AMERICAN HISTORICAL SOCIETY—A Hopkins hour will be held during the Christmas-holiday meeting in Washington, D. C. Time and place will be announced.

MODERN LANGUAGES ASSOCIATION—A Hopkins hour will be held during the Christmas-holiday meeting in New York at the Hotel Statler. Time and date of the meeting will be announced.

THE ANNUAL ROLL CALL, the twelfth to be held at Johns Hopkins, is in full swing. Last year's Roll Call had ten thousand participants, who contributed more than $230,000 to Johns Hopkins. This year's Roll Call will end on January 1, and a check for the total amount contributed will be presented at the annual alumni banquet in February.

THE JOHNS HOPKINS MEDICAL AND SURGICAL ASSOCIATION will hold its biennial meeting on Friday and Saturday, February 27 and 28, 1959, in Baltimore.

EXHIBITION

FROM THIRTEEN TO FORTY-NINE—An exhibition illustrating the territorial expansion of the United States, from 1783 to 1958. Open to the public without charge. (Evergreen House, 4545 North Charles St., Monday through Friday, from 2 to 5 p.m.)

CONFERENCE

THE CHALLENGE OF SOVIET ECONOMIC EXPANSION—A foreign affairs conference for corporation executives sponsored by the Johns Hopkins School of Advanced International Studies and its affiliated Foreign Service Educational Foundation, devoted to a discussion of the significance of Soviet economic progress and its challenge to the commercial and financial interests of the United States. (Tuesday and Wednesday, Dec. 2 and 3, at the Hotel Statler in Washington, D. C.; information and reservations from the School of Advanced International Studies, 1906 Florida Avenue, N. W., Washington 9, D. C.; telephone ADams 4-2940.)

TELEVISION

JOHNS HOPKINS FILE 7—SUNDAY, DEC. 7—"Tool of History," with Dr. Gus Van Beek, research associate, Oriental Seminary; SUNDAY, DEC. 14—"Gifts Without Wrapping," with Lynn Poole; SUNDAY, DEC. 21—"Breath of Life," with Dr. Donald W. Benson, associate professor of anesthesiology; SUNDAY, DEC. 28—Report on Dr. John Strong's balloon flight. (Originating in the studios of WJZ-TV, Baltimore, and broadcast over stations of the American Broadcasting Company network; check local newspapers for time of broadcast in your city.)

VARSITY SPORTS

NOTE—No admission fee is charged at Johns Hopkins home athletic events, but an admission card is required. Persons who wish to attend games during the present university year may obtain a card without charge by sending a stamped, self-addressed envelope to THE DEPARTMENT OF PHYSICAL EDUCATION, THE JOHNS HOPKINS UNIVERSITY, BALTIMORE 18, MARYLAND. Alumni of the University should address their requests for admission cards to THE ALUMNI RELATIONS OFFICE, THE JOHNS HOPKINS UNIVERSITY, BALTIMORE 18, MARYLAND.

BASKETBALL—Johns Hopkins vs. TOWSON TEACHERS on Saturday, Dec. 6 (away); WESTERN MARYLAND on Wednesday, Dec. 10 (Homewood Gymnasium at 8:45 p.m.); HAVERFORD on Saturday, Dec. 13 (away); DELAWARE on Monday, Dec. 15 (Homewood Gymnasium at 8:45 p.m.); SWARTHMORE on Thursday, Dec. 18 (Homewood Gymnasium at 8:30 p.m.); PENNSYLVANIA MILITARY on Wednesday, Jan. 7 (Homewood Gymnasium at 8:45 p.m.); GETTYSBURG on Thursday, Jan. 8 (away); FRANKLIN AND MARSHALL on Saturday, Jan. 10 (Homewood Gymnasium at 8:45 p.m.); CATHOLIC UNIVERSITY on Thursday, Jan. 15 (away); WASHINGTON on Saturday, Jan. 17 (away); DICKINSON on Saturday, Jan. 31 (away).

FENCING—PENNSYLVANIA on Saturday, Dec. 13 (Homewood Gymnasium at 2 p.m.).

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What price freedom? Today more than ever, there is a realization among free men that no price tag can express the value of their liberty; that to have a part in strengthening that liberty, through the free institutions which make it strong, is a privilege every man can well afford.

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